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ANNUAL REPORT

OF THE

TRANSIT DEPARTMENT



OF THE

CITY OF BOSTON

1924



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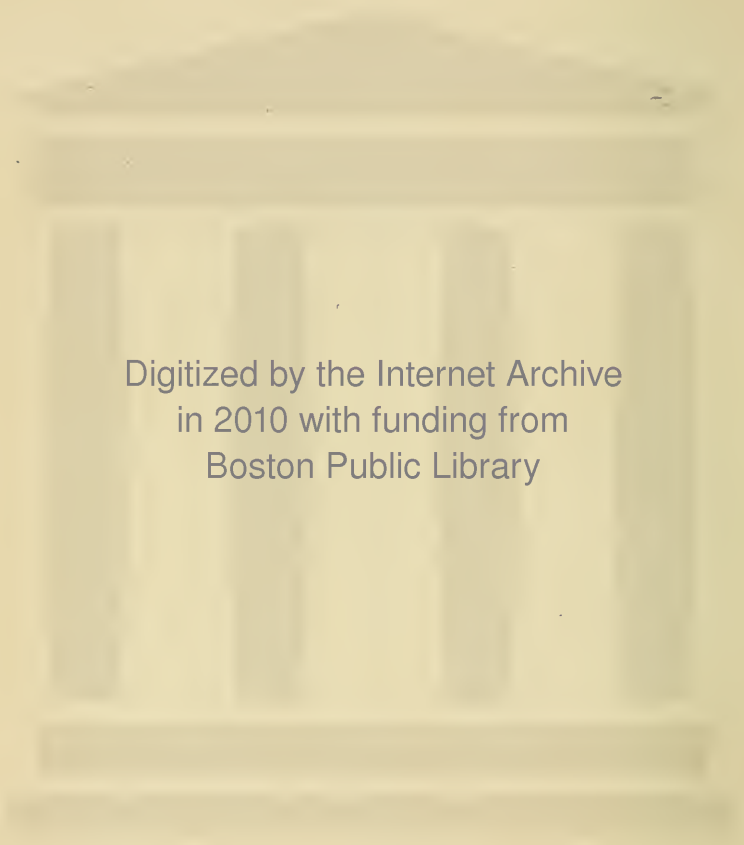
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TRANSIT DEPARTMENT—CITY OF BOSTON

THOMAS F. SULLIVAN, *Chairman,*
FRANCIS E. SLATTERY,
LOUIS K. ROURKE,
Commissioners.

ANNUAL REPORT

OF THE

TRANSIT DEPARTMENT

FOR THE

YEAR ENDING JANUARY 31, 1924



PRINTED BY THE

CITY OF BOSTON

PRINTING DEPARTMENT

1924

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Boston Transit Department
Oct. 7, 1931

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BOSTON TRANSIT DEPARTMENT



ANNUAL REPORT
OF THE
TRANSIT DEPARTMENT
FOR THE YEAR ENDING JANUARY 31, 1924.

1 BEACON STREET, BOSTON, MASS., February 1, 1924.

*To the Mayor and City Council
of the City of Boston:*

In accordance with the requirements of the existing ordinance, The Transit Department respectfully submits the following report:

EAST BOSTON TUNNEL ALTERATIONS.

The work of construction of the underground station of the East Boston tunnel at Maverick square has progressed satisfactorily, and it is planned to open the station to public travel about the middle of April next. The present method of trolley operation will be then discontinued and train operation provided.

Work on changes in the existing stations of the tunnel has been in progress. These changes consist mainly of lengthening the platform of the Devonshire station, and of raising the platforms of the Atlantic, Devonshire, Scollay Under and Bowdoin stations to adapt those stations to train operation.

Details of the progress will be found in the appended report of the Chief Engineer.

CAMBRIDGE CONNECTION.

The work of enlarging the stairway from the westbound platform of the Park street station of the Cambridge Connection to the southbound platform of the Tremont street subway from five feet in width to ten feet is being carried out.

DORCHESTER RAPID TRANSIT.

By chapter 480 of the Acts of 1923 (appendix A) provision was made for an extension of the Dorchester tunnel from its terminus at Andrew square under Boston street, Power street and Dorchester avenue, coming to the surface by an incline south of Dorchester avenue and parallel and adjacent to the tracks operated by the New York, New Haven & Hartford Railroad Company, known as the Boston Division, at a point between Dorchester avenue and Columbia road; a line of surface railway connecting with this extension at the incline and running substantially parallel to, along, or westerly of the location of the Boston Division tracks to the junction of those tracks near Harrison square station with the Shawmut Branch of the New York, New Haven & Hartford Railroad Company; and from this point to Mattapan for service to be furnished over the tracks of the Shawmut Branch, this branch to be taken over by the city for such purpose.

This act was accepted by the City Council and approved by His Honor the Mayor, and accepted by the Board of Directors of the Boston Elevated Railway Company.

Before construction work can be begun, the act must be complied with as follows:

Agreement on the part of the New York, New Haven & Hartford Railroad Company and the Old Colony Railroad Company as to the price to be paid for the Shawmut Branch after determination of such price by the Department of Public Utilities of the Commonwealth.

Deposit with the Commissioner of Public Works of the city of a filing plan showing proposed route and the location thereof, and the general form and method of construction.

Execution of lease of premises by the city and the Boston Elevated Railway Company.

Approval of filing plan, in so far as it covers work affecting the operation of the main line tracks between Andrew square and Harrison square, by the New Haven and the Old Colony Railroad companies, or by the Department of Public Utilities.

Approval by the Department of Public Utilities of plan under which reasonably frequent and adequate rapid transit passenger trains or cars can be safely operated from Welles avenue to Mattapan.

The Transit Department has been engaged in preliminary investigations, surveys and plans, as provided in the act.

HYDE PARK STREET RAILWAY.

By chapter 405 of the Acts of 1923 (appendix B) the City of Boston was authorized to acquire street railway lines in the Hyde Park district and to enter into a contract with the Boston Elevated Railway Company for the operation thereof. Under authority of this act the property of the Eastern Massachusetts Street Railway Company was taken over and a portion thereof leased to the Boston Elevated Railway Company and operation by that company began on September 1st.

DIVISION OF METROPOLITAN PLANNING.

Chapter 399 of the Acts of 1923 (appendix C), establishing the Division of Metropolitan Planning within the Metropolitan District Commission, provided that, of the seven commissioners in charge, one should be an officer of the Transit Department to be designated from time to time by the chairman thereof. In accordance therewith Commissioner Francis E. Slattery was so designated.

SINKING FUNDS.

The following is the condition of the debt and of the sinking funds for the various divisions of the work of the department at the date of this report, as stated by the City Treasurer:

SUBWAY (INCLUDING ALTERATIONS).

(Debt, \$4,416,000, outside debt limit.)

Received:

Amount of fund, February 1, 1923	\$2,501,807 29	
Interest on bank deposits, February 1,		
1923, to date	\$1,155 36	
Interest on investments, February 1,		
1923, to date	108,589 85	
Revenue, etc., February 1, 1923, to date	24,256 00	
Appreciation of investments, February 1,		
1923, to date	938 00	
Carried forward	\$134,939 21	\$2,501,807 29

<i>Brought forward</i>	\$134,939 21	\$2,501,807 29
Bonus on exchange of investments, February 1, 1923, to date	32,782 06	
		167,721 27
		\$2,669,528 56
Paid: Interest on investments purchased, February 1, 1923, to date		16,160 63
		<u>\$2,653,367 93</u>

CHARLESTOWN BRIDGE, No. 1.

(Debt, \$750,000, inside debt limit.)

Amount of fund, February 1, 1923	\$397,601 84	
Interest on bank deposits, February 1, 1923, to date	\$1,063 57	
Interest on investments, February 1, 1923, to date	14,840 00	
Appropriation for debt	5,537 00	
		21,440 57
		<u>\$419,042 41</u>

CHARLESTOWN BRIDGE, No. 2.

(Debt, \$665,000, outside debt limit.)

Amount of fund, February 1, 1923	\$439,052 10	
Interest on bank deposits, February 1, 1923, to date	\$892 36	
Interest on investments, February 1, 1923, to date	17,895 00	
Revenue, etc., February 1, 1923, to date	7,455 08	
		26,242 44
		<u>\$465,294 54</u>

EAST BOSTON TUNNEL.

(Debt \$3,308,000, outside debt limit.)

Amount of fund, February 1, 1923	\$1,453,361 96	
Interest on bank deposits, February 1, 1923, to date	\$706 46	
Interest on investments, February 1, 1923, to date	59,333 22	
Revenue, etc., February 1, 1923, to date	14,272 00	
Appreciation of investments, February 1, 1923, to date	875 00	
Bonus on exchange of investments, February 1, 1923, to date	13,468 30	
		88,654 98
		\$1,542,016 94
Interest on investments purchased, February 1, 1923, to date		6,103 40
		<u>\$1,535,913 54</u>

BOSTON TUNNEL AND SUBWAY.

(Debt, \$8,412,700, outside debt limit.)

Amount of fund, February 1, 1923	\$2,354,923 72	
Interest on bank deposits, February 1, 1923,		
to date	\$1,228 72	
Interest on investments, February 1, 1923,		
to date	104,950 20	
Revenue, etc., February 1, 1923, to date	79,955 00	
Appreciation of investments, February 1,		
1923, to date	938 00	
Bonus on exchange of investments, February		
1, 1923, to date	22,965 89	
		210,037 81
		\$2,564,961 53
Interest on investments purchased, February 1, 1923, to		
date		12,016 88
		<u>\$2,552,944 65</u>

RAPID TRANSIT — CAMBRIDGE CONNECTION.

(Debt, \$1,620,000, outside debt limit.)

Amount of fund, February 1, 1923	\$218,657 46	
Interest on bank deposits, February 1,		
1923, to date	\$942 22	
Interest on investments, February 1, 1923,		
to date	10,027 89	
Revenue, etc., February 1, 1923, to date	15,371 87	
Bonus on exchange of investments, February		
1, 1923, to date	5,843 97	
		32,185 95
		\$250,843 41
Interest on investments purchased, February 1, 1923, to		
date		2,638 54
		<u>\$248,204 87</u>

BOYLSTON STREET SUBWAY.

(Debt, \$5,375,000, outside debt limit.)

Amount of fund, February 1, 1923	\$8,680 46	
Interest on bank deposits, February 1, 1923,		
to date	\$185 51	
Interest on investments, February 1, 1923,		
to date	345 50	
Revenue, etc., February 1, 1923, to date	16,730 27	
Bonus on exchange of investments, February		
1, 1923, to date	236 98	
		17,498 26
		\$26,178 72
Interest on investments purchased, February 1, 1923, to		
date		106 25
		<u>\$26,072 47</u>

DORCHESTER TUNNEL.

(Debt, \$10,800,000, outside debt limit.)

Amount of fund February 1, 1923.		\$93,466 63
Interest on bank deposits, February 1, 1923,		
to date	\$450 67	
Interest on investments, February 1, 1923,		
to date	4,904 61	
Revenue, etc., February 1, 1923, to date	43,259 14	
Appreciation of investments, February 1,		
1923, to date	455 00	
Bonus of exchange of securities, February 1,		
1923, to date	2,211 80	51,281 22
		\$144,747 85
Interest on investments purchased, February 1, 1923, to		
date		1,025 43
		<u>\$143,722 42</u>

ARLINGTON STATION.

(Debt, \$1,235,000, outside debt limit.)

Interest on bank deposits, February 1, 1923, to date.	\$71 38
Premium on loans, February 1, 1923, to date	1,872 00
Revenue, etc., February 1, 1923, to date	6,545 16
	<u>\$8,488 54</u>

EAST BOSTON TUNNEL ALTERATIONS.

(Debt, \$3,260,000, outside debt limit.)

Interest on bank deposits, February 1, 1923, to date	\$78 92
Premium on loans, February 1, 1923, to date	9,240 00
	<u>\$9,318 92</u>

EAST BOSTON TUNNEL EXTENSION.

(Debt, \$2,500,000, outside debt limit.)

Amount of fund February 1, 1923	\$158,833 30
Interest on bank deposits, February 1, 1923,	
to date	\$266 98
Interest on investments, February 1, 1923,	
to date	6,375 00
Revenue, etc., February 1, 1923, to date	2,806 74
	9,448 72
	<u>\$168,282 02</u>

HYDE PARK STREET RAILWAY.

(Debt, \$317,000, outside debt limit.)

(No fund.)

RENTAL BILLS RENDERED TO THE BOSTON ELEVATED RAILWAY
COMPANY.

The following is a statement of the bills rendered for rental of the various tunnels and subways:

TREMONT STREET SUBWAY.

Mar. 31, 1923:			
Net cost of subway	\$4,101,938	70	
Rental for one quarter			\$46,146 81
Alterations: net cost	242,673	93	
Rental for one quarter			2,730 08
June 30, 1923:			
Net cost of subway	4,101,938	70	
Rental for one quarter			46,146 81
Alterations: net cost	242,673	93	
Rental for one quarter			2,730 08
September 30, 1923:			
Net cost of subway	4,101,938	70	
Rental for one quarter			46,146 81
Alterations: net cost	242,673	93	
Rental for one quarter			2,730 08
December 31, 1923:			
Net cost of subway	4,101,938	70	
Rental for one quarter			46,146 81
Alterations: net cost	242,673	93	
Rental for one quarter			2,730 08
Total			<u>\$195,507 56</u>

WASHINGTON STREET TUNNEL.

Mar. 31, 1923:			
Net cost of tunnel	\$7,926,154	76	
Rental for one quarter			\$89,169 24
June 30, 1923:			
Net cost of tunnel	7,926,154	76	
Rental for one quarter			89,169 24
September 30, 1923:			
Net cost of tunnel	7,926,154	76	
Rental for one quarter			89,169 24
December 31, 1923:			
Net cost of tunnel	7,926,154	76	
Rental for one quarter			89,169 24
Total			<u>\$356,676 96</u>

CAMBRIDGE CONNECTION.

Mar. 31, 1923:			
Net cost of connection	\$1,518,533	25	
Rental for one quarter			\$18,507 12
June 30, 1923:			
Net cost of connection	1,518,826	69	
Rental for one quarter			18,510 70
Carried forward			<u>\$37,017 82</u>

<i>Brought forward</i>		\$37,017 82
Sept. 30, 1923:		
Net cost of connection	\$1,518,890 44	
Rental for one quarter		18,511 48
Dec. 31, 1923:		
Net cost of connection	1,526,210 59	
Rental for one quarter		18,600 69
	Total	<u>\$74,129 99</u>

BOYLSTON STREET SUBWAY.

Mar. 31, 1923:		
Net cost of subway	\$5,225,800 79	
Rental for one quarter		\$58,790 26
June 30, 1923:		
Net cost of subway	5,225,832 01	
Rental for one quarter		58,790 61
Sept. 30, 1923:		
Net cost of subway	5,225,856 06	
Rental for one quarter		58,790 88
Dec. 31, 1923:		
Net cost of subway	5,225,881 06	
Rental for one quarter		58,791 16
	Total	<u>\$235,162 91</u>

EAST BOSTON TUNNEL EXTENSION.

Mar. 31, 1923:		
Net cost of extension	\$2,237,447 97	
Rental for one quarter		\$25,171 29
June 30, 1923:		
Net cost of extension	2,244,469 14	
Rental for one quarter		25,329 03
Sept. 30, 1923:		
Net cost of extension	2,244,469 14	
Rental for one quarter		25,250 28
Dec. 31, 1923:		
Net cost of extension	2,250,172 30	
Rental for one quarter		25,314 44
	Total	<u>\$101,065 04</u>

DORCHESTER TUNNEL.

Mar. 31, 1923:		
Net cost of tunnel	\$10,755,015 05	
Rental for one quarter		\$120,993 92
June 30, 1923:		
Net cost of tunnel	10,759,798 59	
Rental for one quarter		121,047 73
Sept. 30, 1923:		
Net cost of tunnel	10,758,026 72	
Rental for one quarter		121,007 59
Dec. 31, 1923:		
Net cost of tunnel	10,760,084 69	
Rental for one quarter		121,050 95
	Total	<u>\$484,100 19</u>

ARLINGTON STATION.

Mar. 31, 1923:		
Net cost of station	\$1,211,135 06	
Rental for one quarter		\$13,625 27
June 30, 1923:		
Net cost of station	1,210,542 97	
Rental for one quarter		13,618 61
Sept. 30, 1923:		
Net cost of station	1,210,558 39	
Rental for one quarter		13,618 78
Dec. 31, 1923:		
Net cost of station	1,210,213 14	
Rental for one quarter		13,614 90
Total		<u>\$54,477 56</u>

EAST BOSTON TUNNEL.

Mar. 31, 1923:		
Net cost of tunnel	\$3,354,917 54	
Rental for one quarter		\$37,742 82
June 30, 1923:		
Net cost of tunnel	3,355,070 43	
Rental for one quarter		37,744 54
Sept. 30, 1923:		
Net cost of tunnel	3,355,146 33	
Rental for one quarter		37,745 40
Dec. 31, 1923:		
Net cost of tunnel	3,355,314 65	
Rental for one quarter		37,747 29
Total		<u>\$150,980 05</u>

HYDE PARK STREET RAILWAY.

Cost of premises	\$225,000 00	
Rental for one month ending September 30, 1923		\$843 75
Dec. 31, 1923:		
Cost of premises	225,000 00	
Rental for one quarter		2,531 25
Total		<u>\$3,375 00</u>

Grand total \$1,655,475 26

Tremont Street Subway	\$195,507 56	
Washington Street Tunnel	356,676 96	
Cambridge Connection	74,129 99	
Boylston Street Subway	235,162 91	
East Boston Tunnel Extension	101,065 04	
Dorchester Tunnel	484,100 19	
Arlington Station	54,477 56	
East Boston Tunnel	150,980 05	
Hyde Park Street Railway	3,375 00	
Total	<u>\$1,655,475 26</u>	

STATEMENT OF EXPENSES.

The following is a classified statement of the expenses of the department for the year ending January 31, 1924:

EAST BOSTON TUNNEL.

SECTION B.

Labor	\$527 11	
Credit:		
Field supplies	10 69	\$516 42

SECTION F.

Skilled service	58 33	
		<u>\$574 75</u>

CAMBRIDGE CONNECTION.

Office:

Transferred from East Boston Tunnel Alterations account	\$346 24
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Engineering and miscellaneous:

Chief Engineer	\$62 50
Field supplies	357 10
Labor	24 00
Lighting	6 54
Rental	68 75
Telephone — telegraph	13 20
Tools	6 81

\$538 90

Credit:

Construction supplies	117 25	421 65
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Alterations Stairway No. 5:

Construction supplies	\$1,246 80
Field supplies	949 06
Fuel	45 01
Instruments	40
Labor	5,828 51
Lighting	162 36
Skilled service	1,761 61
Stationery — supplies	3 90
Teaming	589 76
Tools	1,644 61

12,232 02

\$12,999 91

DORCHESTER TUNNEL.

Office:

Transferred from East Boston Tunnel Alterations account	\$346 23
---	----------

Engineering and miscellaneous:

Chief Engineer	\$62 50
Labor	36 00
Lighting	1 77

Park Street Station Enlargement:

Construction supplies	24 88
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Carried forward	\$125 15	\$346 23
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<i>Brought forward</i>	\$125 15	\$346 23
Skilled service	8 44	
Rental	68 75	
Skilled service	160 89	
Stationery — supplies	47 27	
Telephone — telegraph	7 66	
		418 16
SECTION B.		
Labor	\$488 29	
Skilled service	19 66	
		507 95
SECTION C.		
Damages	\$1,500 00	
Professional Advice	50 00	
Skilled service	13 15	
		1,563 15
SECTION E.		
Labor	\$305 32	
Stationery — supplies	2 20	
Stenographers	550 08	
		857 60
SECTION F.		
Alterations	\$630 86	
Construction supplies	296 19	
Field supplies	12 32	
Labor	1,142 20	
Stationery — supplies	2 05	
Teaming	51 88	
Tools	60	
		2,136 10
SECTION J.		
Construction supplies	\$24 66	
Field supplies	9 92	
Labor	1,248 35	
Stationery — supplies	2 40	
Tools	7 30	
		1,292 63
SECTION K.		
Transferred from East Boston		
Tunnel Alterations account, ...	\$10,590 52	
Stationery — supplies	40	
		10,590 92
Engineering and miscellaneous:		
Chief Engineer	\$1,812 50	
Clerks	18 03	
Field supplies	14 72	
Instruments	48 45	
Labor	45 60	
Lighting	37 68	
Professional Advice	233 00	
Rental	1,458 35	
Skilled service	1,811 76	
Stationery — supplies	182 39	
Stenographers	14 67	
Telephone — telegraph	154 02	
Tools	8 34	
		5,839 51
		<u>\$23,552 25</u>

BOYLSTON STREET SUBWAY.

Engineering and miscellaneous:

Damages	\$25 00
Skilled service	55 27
Stationery — supplies	1 10

\$81 37

EAST BOSTON TUNNEL EXTENSION.

Office:

Transferred from East Boston Tunnel Alterations account	\$346 25
---	----------

Engineering and miscellaneous:

Chief Engineer	\$62 50
Lighting	1 77
Rental	68 75
Skilled service	21 17
Telephone — telegraph	5 59
	159 78

SECTION G.

Scollay Under Station — Raising Platforms:

Construction supplies	\$241 30
Field supplies	401 77
Labor	2,763 35
Skilled service	189 74
Stationery — supplies	2 50
Teaming	12 50
Tools	47 00
	3,658 16

SECTION H.

Bowdoin Station:

Raising Platforms:

Construction supplies	\$1,473 06
Field supplies	467 39
Labor	3,021 32
Skilled service	222 08
Teaming	7 50
Tools	47 62
	\$5,238 97

Alterations Stairways Nos. 4

& 5:

Construction supplies	\$155 43
Field supplies	209 36
Labor	2,329 58
Skilled service	603 18
Stationery supplies	4 30
Teaming	201 62
Tools	466 75
	3,970 22

<i>Carried forward</i>	\$9,209 19		\$4,164 19
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TRANSIT DEPARTMENT.

13

<i>Brought forward</i>	\$9,209 19	\$4,164 19
Alteration Stairway No. 6:		
Construc-		
tion sup-		
plies	\$24 88	
Field sup-		
plies	37 00	
Labor	1,324 18	
Lighting	4 20	
Skilled serv-		
ice	140 92	
	1,531 18	
		10,740 37
		\$14,904 56

SECTION J.

Credit:		
Property damages: Takings	3 59	
		<u>\$14,900 97</u>

ARLINGTON STATION.

Construction:

Credit:		
Construction supplies	\$1,654 04	
Field supplies	46 91	
Labor	313 79	
Stationery supplies	35 30	
Teaming	5 00	
Tools	252 78	
	\$2,307 82	
Charge:		
Drainage	155 87	
Net credit		\$2,151 95
Extension:		
Credit:		
Construction	\$343 64	
Charge:		
Drainage	77 93	
		265 71
Total credit		<u>\$2,417 66</u>

EAST BOSTON TUNNEL ALTERATIONS.

Office:

Furniture	\$138 95
Lighting	194 37
Printing	1,615 15
Rental	5,750 00
Repairs	218 64
Stationery — supplies	972 23
Telephone — telegraph	1,982 38
Office boy	793 34
Stenographers	4,995 54
Assistant Secretary and Chief	
Clerk	2,817 30
Commissioners and Secretary,	
	21,565 63

Carried forward \$41,043 53

<i>Brought forward</i> . . .	\$41,043 53	
Transferred to Dorchester Tunnel account . . .	\$346 23	
Transferred to Dorchester Tunnel, Section K acc't . . .	10,590 52	
Transferred to Cambridge Connection account . . .	346 24	
Transferred to East Boston Tunnel Extension account . . .	346 25	
Transferred to Hyde Park Street Railway account . . .	2,195 04	
	13,824 28	\$27,219 25
Engineering and miscellaneous:		
Chief Engineer . . .	\$4,395 83	
Clerks . . .	6,058 15	
Furniture . . .	2 00	
Lighting . . .	115 62	
Printing . . .	288 90	
Rental . . .	4,283 33	
Skilled service . . .	28,740 83	
Stationery—		
supplies . . .	4,165 18	
Stenographers . . .	4,568 26	
Telephone—		
telegraph . . .	420 42	
	\$53,038 52	
Devonshire Station: Lengthening Platforms:		
Skilled service, . . .	\$2,990 24	
Stationery—		
supplies . . .	64 28	
	3,054 52	
Devonshire Station: Raising Platforms:		
Skilled service, . . .	\$177 55	
Stationery—		
supplies . . .	50	
	178 05	
Atlantic Avenue: Raising Platforms:		
Skilled service . . .	31 55	
	56,302 64	
Construction Expenses:		
Advertising . . .	\$114 50	
Alterations . . .	5,471 07	
Construction		
supplies . . .	137,506 71	
Damages . . .	1,208 08	
Field supplies . . .	59,937 81	
Fuel . . .	9,033 87	
Inspection . . .	211 30	
Labor . . .	899,537 03	
Lighting . . .	43,999 68	
Paving . . .	7,198 57	
Professional advice . . .	2,450 08	
<i>Carried forward,</i> . . .	\$1,166,668 70	\$83,521 89

<i>Brought forward,</i>	\$1,166,668 70	\$83,521 89
Rental	9,742 09	
Teaming	113,728 68	
Telephone— telegraph	70 24	
Tools	30,825 02	
Water pipes	5,171 74	
	\$1,326,206 47	
Credit:		
Instruments	24 55	
	\$1,326,181 92	
Devonshire Sta- tion: Length- ing Platforms:		
Alterations	\$126 10	
Construction supplies	2,792 83	
Field supplies	2,467 46	
Fuel	146 26	
Labor	31,712 53	
Lighting	962 25	
Paving	176 80	
Teaming	1,180 38	
Telephone- telegraph	48 03	
Tools	1,948 81	
Water pipes	59 66	
	41,621 11	
Devonshire Sta- tion: Raising Platforms:		
Construction	\$84 47	
Field supplies	153 27	
Labor	1,239 68	
	1,477 42	
Atlantic Avenue:		
Raising Plat- forms:		
Construction	\$84 10	
Field supplies	69 61	
Labor	227 39	
	381 10	
	1,369,661 55	
Interest	78,260 96	
	\$1,531,444 40	

HYDE PARK STREET RAILWAY.

Office:		
Transferred from East Boston Tunnel Alterations account	\$2,195 04	
Engineering and miscellaneous		
Alterations	\$43 60	
Chief Engineer	354 17	
Labor	76 80	
Lighting	8 00	
Professional advice	1,083 00	
Property damages: Takings	310,000 00	
Rental	358 32	
Skilled service	355 66	
Stationery-supplies	15 45	
Telephone-telegraph	28 22	
	312,323 22	
	\$314,518 26	

DORCHESTER RAPID TRANSIT — EASTERN DIVISION

Engineering and miscellaneous:

Clerks	\$216 36	
Instruments	150 10	
Skilled service	12,679 29	
Stationery-supplies	281 42	
		\$13,327 17

SECTION 1.

Skilled service	\$56 44	
Stationery-supplies	40	
		56 84

SECTION 4.

Skilled service	185 92	
		<u>\$13,569 93</u>

Increase:

East Boston Tunnel	\$574 75
Cambridge Connection	12,999 91
Dorchester Tunnel	23,552 25
Boylston Street Subway	81 37
East Boston Tunnel Extension	14,900 97
East Boston Tunnel Altera- tions	1,531,444 40
Hyde Park Street Railway	314,518 26
Dorchester Rapid Transit — Eastern Division	13,569 93

\$1,911,641 84

Decrease:

Arlington Station	2,417 66
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Net Increase		<u>\$1,909,224 18</u>
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SUMMARY.

	From beginning of work to Jan. 31, 1923.	Jan. 31, 1923, to Jan. 31, 1924.	Total.
Subway—Subway Commis- sion	\$14,131 16		\$14,131 16
Part of General Expenses, Engineering and miscel- laneous	117,550 71		117,550 71
Section One	407,475 48		407,475 48
Two	239,407 12		239,407 12
Three	363,605 50		363,605 50
Section Three and one- half	300,639 36		300,639 36
Four	9,355 70		9,355 70
Five	472,147 31		472,147 31
Six	387,411 49		387,411 49
Seven	327,541 86		327,541 86
Eight	231,504 27		231,504 27
Eight and one- half	95,902 06		95,902 06
Nine	76,639 47		76,639 47
Ten	299,452 07		299,452 07
Eleven	254,497 88		254,497 88
Interest	270,310 57		270,310 57
	258,575 60		258,575 60
	\$4,126,147 61		\$4,126,147 61
Transfers to Alterations, see 11th report	4 95		4 95
	<u>\$4,126,142 66</u>		<u>\$4,126,142 66</u>

	From beginning of work to Jan. 31, 1923.	Jan. 31, 1923, to Jan. 31, 1924.	Total.
Alterations — Part of Gen- eral Expenses	\$28,945 53		\$28,945 53
Section Three	2,568 26		2,568 26
Four	163 42		163 42
Five	30,233 01		30,233 01
Seven	178,516 16		178,516 16
Nine	3 00		3 00
Ten	534 04		534 04
Interest	1,905 56		1,905 56
Transfer from Subway, see 11th report	4 95		4 95
	<u>\$242,873 93</u>		<u>\$242,873 93</u>
Charlestown Bridge: Total	<u>\$1,570,197 98</u>		<u>\$1,570,197 98</u>
Investigation of Congestion of Traffic, etc. . . .	<u>\$3,015 92</u>		<u>\$3,015 92</u>
East Boston Tunnel — Part of General Expenses .	\$161,134 78		\$161,134 78
Engineering and miscel- laneous	199,492 58		199,492 58
Section A	98,869 09		98,869 09
B	1,460,419 39	\$516 42	1,460,935 81
C	508,202 77		508,202 77
D	246,569 26		246,569 26
E	188,303 27		188,303 27
F	243,686 10	58 33	243,744 43
Interest	248,156 88		248,156 88
	<u>\$3,354,834 12</u>	<u>\$574 75</u>	<u>\$3,355,408 87</u>
Boston Tunnel & Subway Part of General Ex- penses	\$226,547 21		\$226,547 21
Engineering and miscel- laneous	419,450 55		419,450 55
Section One	815,586 82		815,586 82
Two	614,156 25		614,156 25
Three	683,832 90		683,832 90
Four	1,205,244 49		1,205,244 49
Five	1,080,101 86		1,080,101 86
Six	334,530 37		334,530 37
Seven	139,723 14		139,723 14
Eight	617,152 07		617,152 07
Nine	678,714 43		678,714 43
Ten	142,835 42		142,835 42
Eleven	345,493 91		345,493 91
Twelve	45,417 52		45,417 52
Interest	648,179 81		648,179 81
	<u>\$7,996,966 75</u>		<u>\$7,996,966 75</u>

	From beginning of work to Jan. 31, 1923.	Jan. 31, 1923, to Jan. 31, 1924.	Total.
Cambridge Connection —			
Part of General Ex-			
penses	\$64,502 37	\$346 24	\$64,848 61
Engineering and miscel-			
laneous	143,003 88	12,653 67	155,657 55
Section One	590,277 28		590,277 28
Two	637,416 37		637,416 37
Interest	76,722 00		76,722 00
	<u>\$1,511,921 90</u>	<u>\$12,999 91</u>	<u>\$1,524,921 81</u>
Dorchester Tunnel — Part			
of General Expenses .	\$196,561 54	\$346 23	\$196,907 77
Engineering and miscel-			
laneous	832,692 29	418 16	833,110 45
Section A	409,381 71		409,381 71
B	876,613 35	507 95	877,121 30
C	458,816 18	1,563 15	460,379 33
D	1,116,198 78		1,116,198 78
E	2,338,941 85	857 60	2,339,799 45
F	860,277 69	2,136 10	862,413 79
G	616,147 82		616,147 82
H	892,879 48		892,879 48
J	951,353 12	1,292 63	952,645 75
K		16,430 43	16,430 43
Interest	1,312,320 20		1,312,320 20
	<u>\$10,862,184 01</u>	<u>\$23,552 25</u>	<u>\$10,885,736 26</u>
Boylston Street Subway —			
Part of General Ex-			
penses	\$104,130 53		\$104,130 53
Engineering and miscel-			
laneous	239,219 40	\$81 37	239,300 77
Section One	756,769 61		756,769 61
Two	1,215,705 85		1,215,705 85
Three	585,416 58		585,416 58
Four	1,457,386 83		1,457,386 83
Five	729,105 29		729,105 29
Interest	320,194 59		320,194 59
	<u>\$5,407,928 68</u>	<u>\$81 37</u>	<u>\$5,408,010 05</u>
East Boston Tunnel Exten-			
sion — Part of General			
Expenses	\$33,639 30	\$346 25	\$33,985 55
Engineering and miscel-			
laneous	974,131 55	159 78	974,291 33
Section G	289,575 11	3,658 16	293,233 27
H	627,059 41	10,740 37	637,799 78
J	137,958 58	* 3 59	137,954 99
Interest	224,138 91		224,138 91
	<u>\$2,286,502 86</u>	<u>\$14,900 97</u>	<u>\$2,301,403 83</u>

* Decrease.

	From beginning of work to Jan. 31, 1923.	Jan. 31, 1923, to Jan. 31, 1924.	Total.
Arlington Station — Part of General Expenses .	\$41,313 26		\$41,313 26
Engineering and miscel- laneous	72,976 45		72,976 45
Construction	576,033 89	* \$2,151 95	573,881 94
Extension	481,951 54	* 265 71	481,685 83
Interest	55,738 68		55,738 68
	<u>\$1,228,013 82</u>	<u>* \$2,417 66</u>	<u>\$1,225,596 16</u>
East Boston Tunnel Altera- tions — Part of Gen- eral Expenses . . .	\$38,787 80	\$27,219 25	\$66,007 05
Engineering and miscel- laneous	93,752 85	56,302 64	150,055 49
Construction	1,562,634 89	1,369,661 55	2,932,296 44
Interest	* 17 36	78,260 96	78,243 60
	<u>\$1,695,158 18</u>	<u>\$1,531,444 40</u>	<u>\$3,226,602 58</u>
Hyde Park Street Railway — Part of General Ex- penses	—	\$2,195 04	\$2,195 04
Engineering and miscel- laneous	—	312,323 22	312,323 22
		<u>\$314,518 26</u>	<u>\$314,518 26</u>
Dorchester Rapid Transit— Eastern Division — En- gineering and miscel- laneous	—	\$13,327 17	\$13,327 17
Section One	—	56 84	56 84
Four	—	185 92	185 92
		<u>\$13,569 93</u>	<u>\$13,569 93</u>
Chapter 78 — Resolves of 1913	<u>\$389 14</u>		<u>\$389 14</u>
Chapter 84 — Resolves of 1913	<u>\$636 58</u>		<u>\$636 58</u>
Dorchester Tunnel Exten- sion	<u>\$520 19</u>		<u>\$520 19</u>
Grand Totals . . .	<u>\$40,287,286 72</u>	<u>\$1,909,224 18</u>	<u>\$42,196,510 90</u>

* Decrease.

The report of the Chief Engineer follows.

THOMAS F. SULLIVAN,
FRANCIS E. SLATTERY,
LOUIS K. ROURKE,
Commissioners.

REPORT OF CHIEF ENGINEER.

BOSTON, January 31, 1924.

THOMAS F. SULLIVAN, FRANCIS E. SLATTERY AND LOUIS K. ROURKE, *Commissioners, City of Boston Transit Department.*

GENTLEMEN,— I herewith submit a report for the year ending January 31, 1924.

The engineering work of the Department, both in the office and field, has been carried on during the last year along the lines described in the last annual report. The office work has consisted largely in making plans and designs for Maverick Square Station, Devonshire Station Extension, Cambridge Connection, Stairway and Platform enlargement at Park street, Bowdoin Square and Scollay Square station changes. Plans and inventories were made in connection with the purchase by the City of the street railway lines in Hyde Park for their operation by the Boston Elevated Railway Company. Preliminary investigations and numerous studies have also been made on the extension of the Dorchester Rapid Transit facilities. This work has been done under the direction of Assistant Engineer Leonard B. Howe.

The field work has consisted in giving lines and grades, the work of inspection, etc., and also the supervision and direction of the actual construction, which has been done largely by employees of this Department.

Construction work has been carried on in the following places:

East Boston Tunnel Alterations, Maverick Square.

East Boston Tunnel Alterations, Extension of Devonshire Station.

Cambridge Connection, Stairway and Platform Enlargement at Park Street.

Raising platforms at Bowdoin, Scollay, Devonshire and Atlantic Stations. Alterations in stairways and passageways at Bowdoin Square.

EXTENSION OF DORCHESTER RAPID TRANSIT FACILITIES.

Immediately upon the passage of the act for the extension of the Dorchester Rapid Transit facilities two surveying parties

were put in the field to carry on the preliminary surveys and investigations, as provided for in the act. The surveys cover a distance of six miles along the line of the New York, New Haven & Hartford Railroad from Andrew Square to Harrison Square, thence via the Shawmut Branch to Mattapan. This work is still in progress, under the direction of Assistant Engineer William W. Lewis.

EAST BOSTON TUNNEL ALTERATIONS.

The engineering and construction work on the East Boston Tunnel Alterations described in the last annual report has been carried on throughout the year by the employees of this Department. The continued cold weather and heavy snows during the months of February and March greatly hampered the progress of the work. Many water pipes and pumps were necessarily exposed and were kept running only under the greatest difficulty. Much ice and snow had to be cut out and removed repeatedly from the deep excavations in order to carry the work ahead. Under one of the buildings on the easterly side of Lewis street, near Webster street, many small streams of tide water were encountered. This greatly hampered the work of excavation and it was found necessary to sink a deep well, into which these streams of tide water were led. An electric centrifugal pump was installed and by continuous pumping the excavation was carried down. Aside from the excavation work, the waterproofing, steel erection, concreting, etc., was carried along under the most unfavorable conditions. Every precaution, however, was taken to protect the new concrete from freezing during the severe weather. In April conditions improved, and the progress made thereafter was more rapid.

A night shift had been used on the work during the preceding months, as it was necessary to do certain parts of the work between midnight and early morning, when the car traffic in the tunnel was the lightest. It was later found advantageous to put on a third shift working from afternoon until midnight, for the purpose of carrying on the work of the day gangs in places where only a small number of men could work at one time. The work therefore has been carried on continuously, day and night, in three shifts, for the last eight months, the day shift being much the largest.

The work of temporarily supporting the buildings on both sides of Lewis street while construction work was going on beneath them was continued by using the same methods described in the previous report.

The permanent foundations for all buildings thus carried have since been built; the temporary beams, jacks and blocking removed, and the buildings are now permanently supported on the roof of the new tunnel station.

REMOVAL OF OLD TUNNEL.

The construction of the station, as was mentioned in the last annual report, necessitated the removal of about 520 feet of the old tunnel under Lewis street. As the tunnel under the harbor is the main artery of travel for cars passing between East Boston and Boston, it was imperative that it be kept open at all times for traffic, while the work of removal of the Lewis street section of the tunnel was going on.

The tunnel itself was an arch section, two and a half to three feet in thickness, built of concrete with practically no reinforcement. The span of the arch was about 24 feet, over the two tracks. The lack of reinforcing steel while simplifying somewhat the problem of removal of the concrete arch also added an element of danger, owing to the uncertainty of just how much of the concrete would be loosened by the blasting and liable to fall unexpectedly. Considerable study has been given the entire matter, and the method finally adopted was carried through without causing any delay to the traffic or an accident of any kind.

The plan used was as follows:

The work of removing the tunnel, starting at Sumner street and going south on Lewis street, was laid out so that alternate 15-foot sections of the arch of the tunnel would be removed at one time. The street was bridged with heavy timbers and planking over these sections, which were six in number, for the first operation. Earth was then excavated under the bridging, exposing the arch. Holes were drilled by the use of pneumatic drills, the drilling being carried on by the day and evening gangs. These holes were loaded with light charges of dynamite after midnight, and the blasting was done between 1:30 and 4:30 in the morning, when the traffic through the tunnel was the lightest. Cars during this time ran back and forth between Boston and East Boston, on one

track, at intervals of about twenty minutes. This gave an opportunity to blast and remove some of the concrete during these intervals. A wire crew removed and replaced the trolley wires on both tracks for a distance of about 100 feet each night, the cars being carried through this section by the use of a portable wire.

Great care was used in examining the adjacent roof and side walls that remained standing after each blast, to see if any cracks occurred, and if the slightest danger was thought to exist the arch was shored up by placing wooden posts between the tracks. In some cases the overhanging side walls were tied back by wire rope and held securely until blasted down the following night.

Plate 1 shows a section where temporary wooden posts had been placed between the tracks.

After the first two sections of arch were removed the columns and beams for the new station roof were erected, after which the reinforced concrete was placed and the roof waterproofed. The bridging was then placed to span between the two new sections of roof, after which the ring of concrete arch of the old tunnel left standing between them was removed.

Plate 2 shows two alternate rings of the old tunnel and sections of the new flat roof in place between them.

Plate 3 shows an interior view at the same place.

This slice method was used for a distance of about 150 feet south of Sumner street, as it had been planned to turn the cars out of the old tunnel to either side, by means of temporary cross-over tracks, on to the train tracks in the new sections of the station located under the buildings on Lewis street.

The new train tracks were to connect again with the tracks in the old tunnel at the southerly end of the work at a location in the center of, and under, the south loop near Marginal street. This also involved the removal of a long section of old tunnel and the building of the new. This work was therefore carried on simultaneously with that at the northerly end.

The problem here, however, was an entirely different and much more complicated one than that at the northerly end, as the invert of the old tunnel at this point was about 45 feet below the street level and the space in which to work was very limited. The new tunnel at this point branches off to the right and left from the location of the old tunnel. The side walls of the new tunnel had already been built as far as possible until they

approached the old tunnel within a few feet, leaving no room in which to work. As the new walls approached they were to occupy part, and finally most, of the space occupied by the old walls. In order to remove the old walls it necessitated, first, the removal of the arch itself. This required a deep excavation with a strong system of sheeting and bracing, owing to a heavy bank of flowing clay on each side.

Plate 4 is a view looking upward from the invert and shows the bracing system at this point.

Plate 5 shows a view of the old tunnel at this point with arch removed. The new side walls may be seen outside of the old on the lower level. The ends of the new surface car loop are shown on the upper level.

The old walls at this point could be removed only in very short sections, as it was impossible to brace directly across the tracks, owing to the necessity of keeping them clear at all times for cars. The walls were therefore removed in sections about eight feet long and the work was carried down two or three feet at a time by drilling and blasting, followed immediately by the sheeting and bracing until about four feet below the bottom of the old tunnel. The reinforced concrete footings were then placed and the walls brought up in four lifts, rebracing after each lift.

Considerable water was encountered here, as on all the work south of Sumner street, and it necessitated constant pumping to enable the work to proceed.

The blasted concrete was removed by derricks on the street above and also on a work car that was run into the tunnel every night during blasting operations.

After each section of side wall was built the steel roof beams were placed, the roof was finished and the next section immediately started. This process was necessarily very slow, as there were only three hours for blasting and cleaning up each night, and even this work was interrupted by the running of cars on one track. It was also necessary to stop and inspect old arch after each blast, to prevent the possibility of an accident to passing cars from loosened concrete that might fall.

The heavy car traffic during the day made it almost impossible to do the work of drilling, excavating, carpenter work on forms and placing concrete, as the clearances between the cars and walls were very small.



PLATE 1.—TEMPORARY WOODEN POSTS BETWEEN TRACKS
DURING BLASTING OPERATIONS.

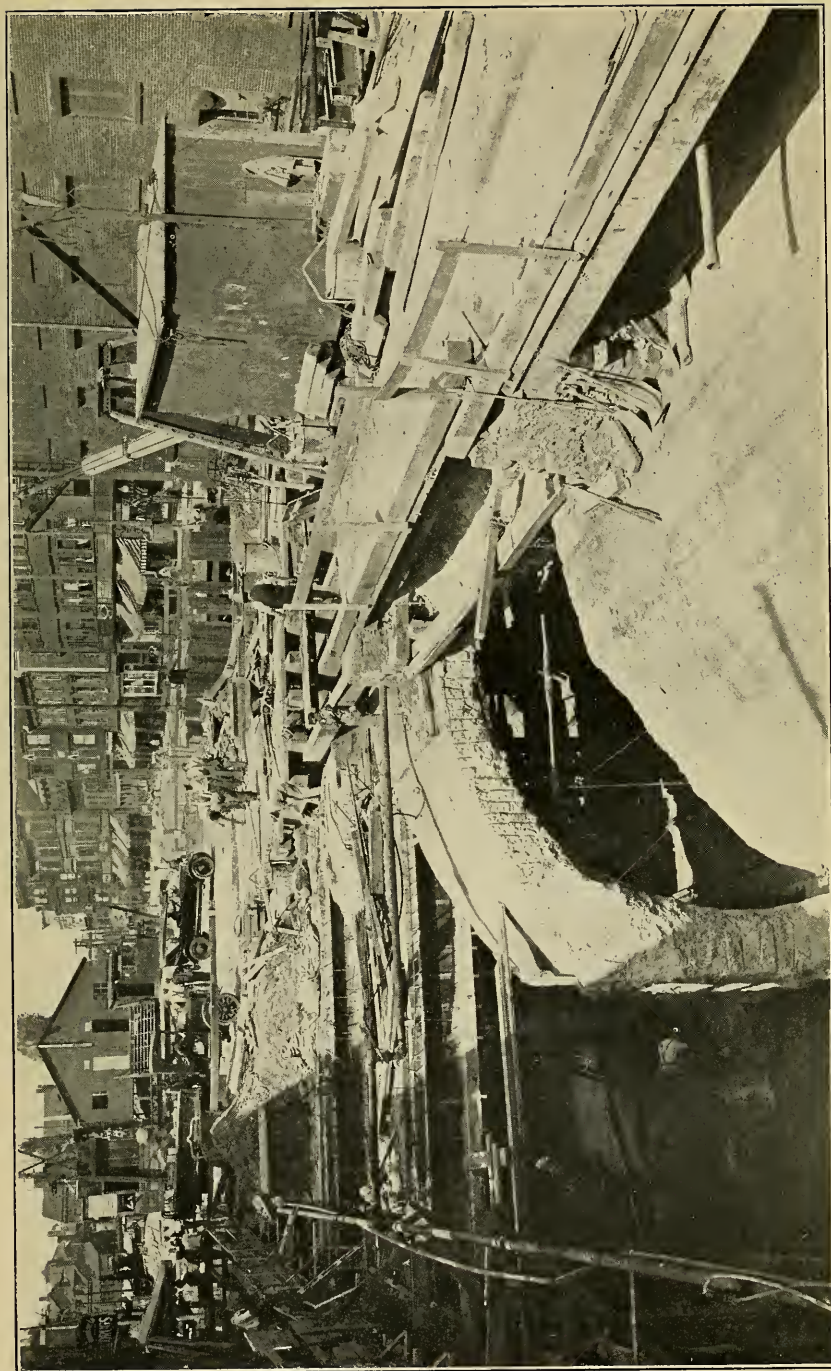


PLATE 2.—REMOVAL OF OLD TUNNEL IN SECTIONS AND CONSTRUCTION OF NEW STATION ROOF SECTIONS.

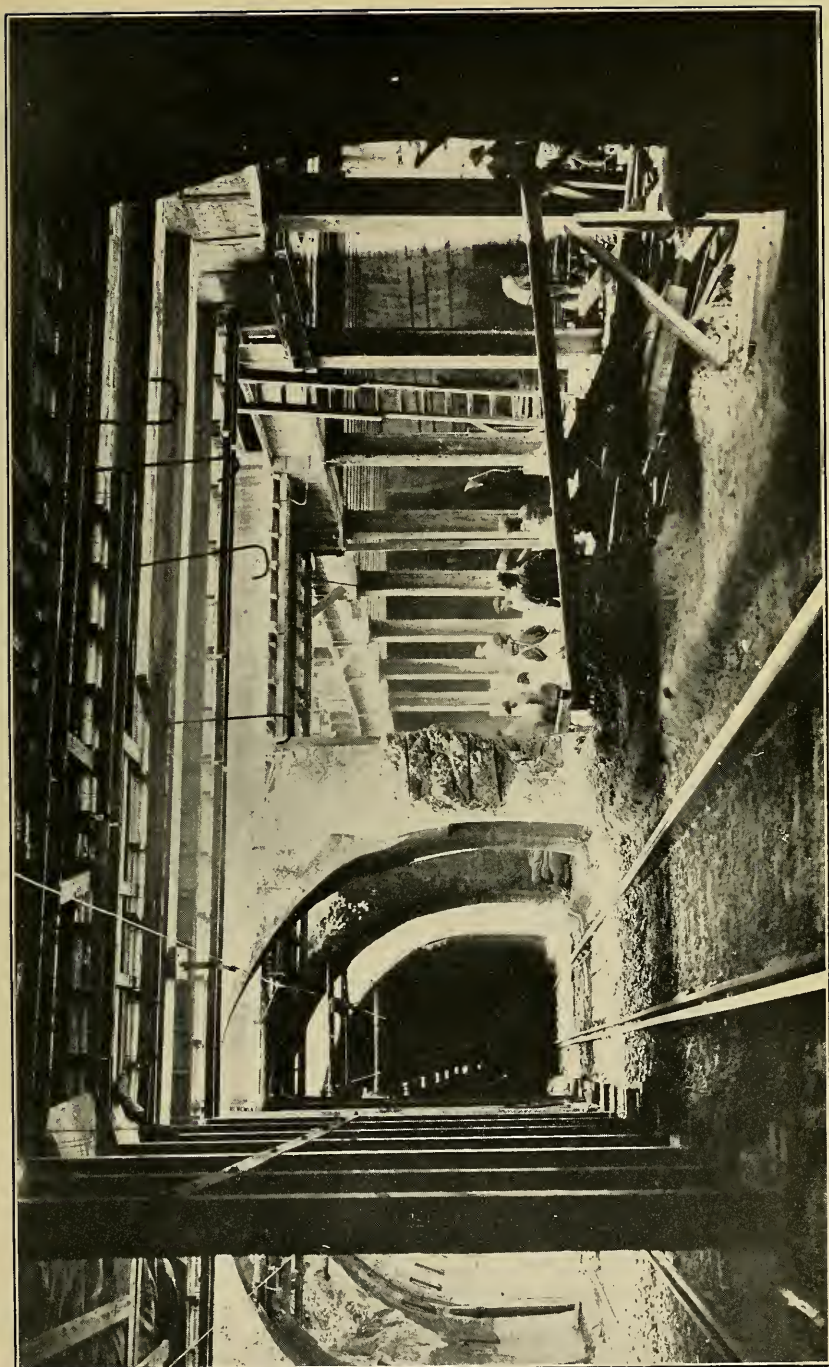


PLATE 3.—INTERIOR VIEW SHOWING ALTERNATE RINGS OF OLD TUNNEL AND NEW STATION ROOF SECTIONS.

Close watch was also kept to see that no settlement took place on the buildings on either side of the street above.

The train track on the westerly side was completed first and the tunnel cars were turned on to this track, in-bound to Boston, on November 5th. Cars were turned on the out-bound, or easterly, track on November 17th.

Plate 6 shows view taken just after cars had been turned on new in-bound track.

The removal of the cars from the rest of the tunnel enabled the blasting to proceed much faster, and the entire section has now been removed.

Plate 7 shows a portion of the tunnel after the cars had been removed, also shows method of removing old concrete by use of work car, derrick and cableway.

Plate 8 shows construction of new station columns and beams where part of the old tunnel has been removed.

The blasting operations for the removal of the main tunnel started in February and have been carried on continuously. In all, over 15,000 charges of dynamite have been fired and about 3,800 cubic yards of concrete removed.

Plate 9 shows old tunnel in Lewis street after the cars had been removed.

WEBSTER STREET RAILROAD CROSSING.

A single-line railroad track crosses above the old tunnel on Webster street, at the junction with Lewis street, and it has been necessary at all times to keep this track available for use. The track on each side of Lewis street was first supported by steel beams placed under it at right angles and carried on blocking on the concrete arch of the new tunnel (train tracks) on either side. The section in the centre of the street over the old tunnel was carried in a similar manner by beams thirty to thirty-six feet in length resting on blocking on the earth over the arch.

A section twenty-four feet wide was then excavated over the old tunnel directly under these tracks to a section of the tunnel, which was drilled, blasted and removed in the same manner as the other sections farther north. Centre columns and roof beams for the new structure were then placed and, when the concrete roof was poured and waterproofed, the railroad tracks were permanently supported on it by means of concrete walls

built under each rail. These walls were built in short sections as the temporary supporting beams were removed.

Plate 10 shows a general view near railroad crossing, also shows method of supporting 10-inch water main hung from temporary beam above while the arch beneath is being blasted down.

BRIDGING WORK, MAVERICK STREET.

At the junction of Chelsea street and Maverick street the car tracks from the East Boston Tunnel curve to the right and run diagonally across the line of the new subway for a length of approximately sixty feet. It was necessary that the running of the cars over these tracks should be uninterrupted during construction of the new subway beneath, also that Maverick street itself be kept open for heavy vehicular traffic. This required bridging the entire surface in the immediate vicinity. The following is a description of the method used:

During the day time, and while the cars were being operated over the tracks, paving was removed and shallow excavation was carried down to just below the bottom of the ties. Wooden stringers were then placed under the ties and a heavy plank flooring placed even with the top of rail. A deeper excavation to about 4 feet in depth was then made in short sections; the timbers now supporting the tracks being posted down as the excavation proceeded. When the full width had been thus bridged, steel beams 48 feet in length were placed under the wooden supporting stringers at right angles to the line of the tunnel, and resting on blocking at each end. The wooden posts were then removed. This allowed an excavation for the total width of the subway, or about 42 feet, to be carried down in one operation. The earth was removed through hatches left in the bridging and so arranged as to cause no interference to traffic.

After the subway was built, the tracks and timbers carrying them were supported again on wooden posts, or horse heads, which rested on the roof of the new subway. The steel beams were then removed and backfilling started. After this backfilling under the tracks has settled sufficiently the wooden longitudinal stringers directly under the tracks will be taken out, the temporary paving removed and the street permanently repaved. Much of the backfilling for the entire job has been done. The material has been handled by teams and trucks

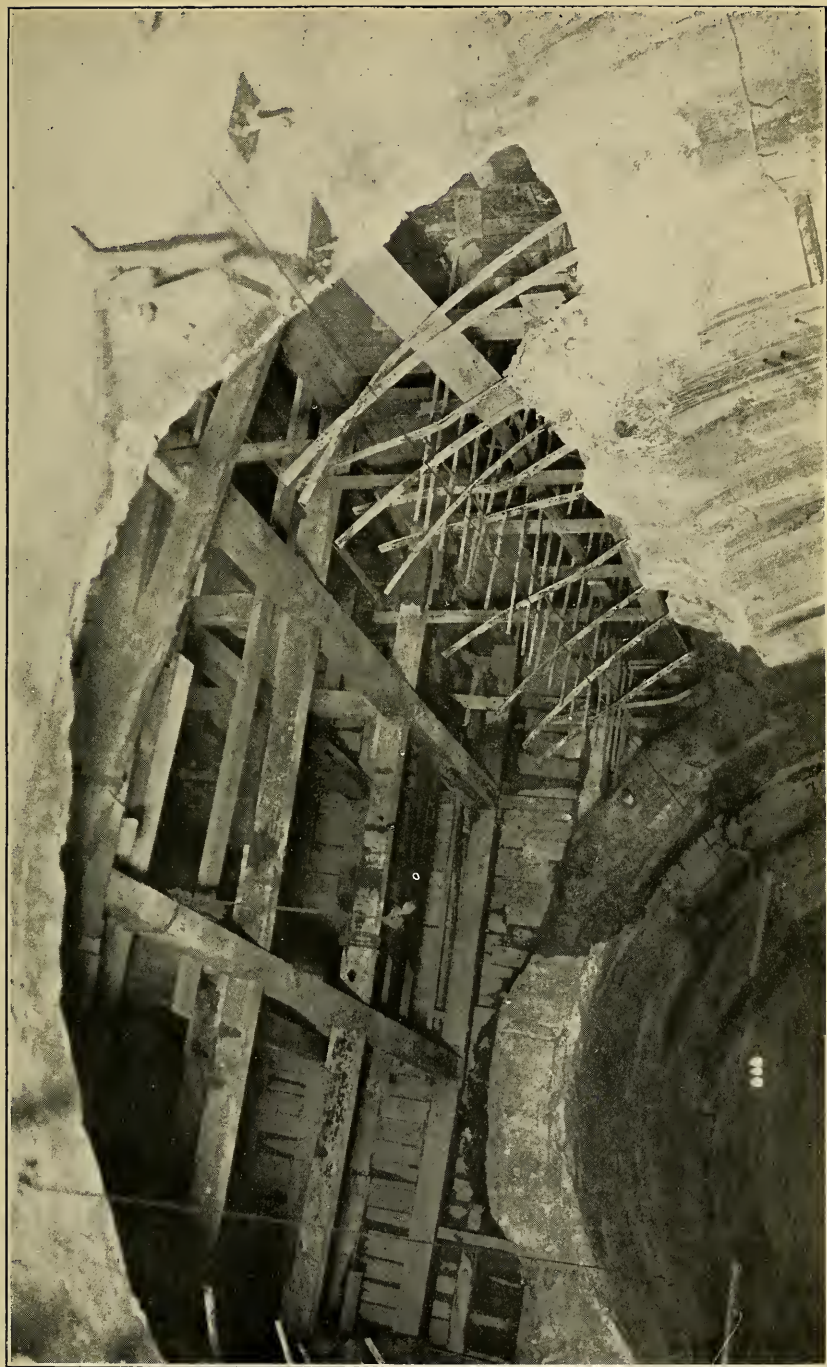


PLATE 4.—VIEW LOOKING UPWARD FROM TRACKS, SHOWING ARCH PARTLY REMOVED AND SYSTEM OF BRACING.

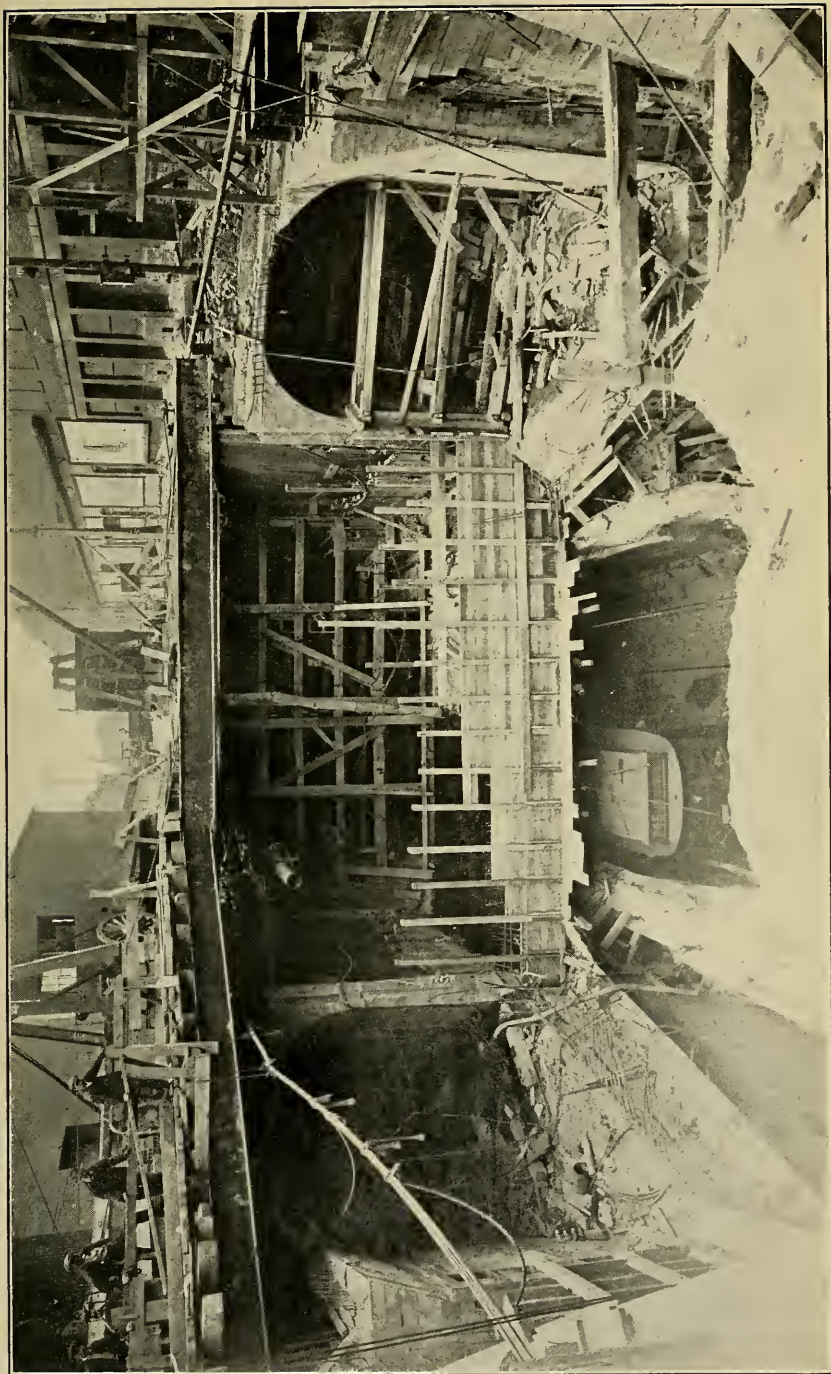


PLATE 5.—GENERAL VIEW AT SOUTH LOOP.

obtained, as in the previous year, under a contract with Edward J. McHugh & Son.

STATION FINISH.

The interior finish of the station is of white Keene cement plaster, troweled smooth, on walls and ceiling. The walls were first covered with half-ribbed terra cotta tile to allow for the drainage of any moisture which might seep through. This tile is attached to the walls with cement mortar and additionally secured by resting every other tile on a $\frac{1}{4}$ -inch hook rod fastened in the walls by first driving them into holes drilled for them and then firmly imbedding them in mortar. On the face of the tile on the walls and on the concrete ceiling, which had been roughened with pneumatic chipping hammers, was applied a coating of cement plaster left with a rough finish. After this coat had thoroughly set a coat about $\frac{1}{4}$ inch thick of white Keene cement was applied and given a trowel finish.

The plaster finish on the ceiling of that part of the station over the tracks where the passage of cars was continuous except for the hours between 1:30 and 4:30 A. M. was necessarily done during these hours when one track was available for the work. The remainder of the plaster work was done during the day time. The work of placing the ribbed tile was done by employees of this Department. The plastering was done under contract by A. V. Day & Co.

In the northerly part of the station, on both sides, several large rooms have been built, including trainmen's room, toilet rooms, switch rooms, signal room, train despatcher's room, etc. The partitions are in most cases of hollow terra cotta tile with the same exterior plaster finish as the rest of the station. At the present date about one-half of the entire finish is completed.

Plate 11 shows the plaster finish in station near temporary cross-over.

ENTRANCES AND EXITS.

Provision is being made for passengers wishing to enter or leave the new station in the vicinity of Sumner street at Maverick square by means of passageways and stairways leading to a building which is being erected on the southerly end of the mound over the old tunnel. This building is to be of brick and artificial stone and will be one story in height. It

will be equipped with ticket offices, passimeter, etc. It is now being constructed under a contract with Carmine Antonellis.

Additional exit stairways are to be provided near the south-erly end of the station on the east and west sides of Lewis street near Webster street.

EQUIPMENT OF NEW SUBWAY.

Early in the fall that part of the work under Chelsea street and under Maverick square north of Sumner street, which was described in the last report, was practically completed, and the Boston Elevated Railway Company was permitted to install its tracks and other equipment, such as conduits for cables, signals, heaters in the car pits, pump, toilets, ejectors, compressed-air pipes, water and gas connections and an elevator from the street surface to the machine shop under Chelsea street.

Plate 12 is a view showing track in place in portion of new subway.

The equipment of the station proper is following the work of putting on the station finish which has progressed so as to permit of opening the station for traffic in the early spring.

The engineering and construction work has been carried on this year, as in the previous year, under the direction of Assistant Chief Engineer Wilbur W. Davis.

EAST BOSTON TUNNEL.

RAISING PLATFORMS OF STATIONS IN BOSTON.

The platforms of Bowdoin Square, Scollay Under, Devonshire and Atlantic Avenue stations are being raised to an elevation of 3 feet 4 inches above the top of the rail.

This change is being made on account of the new type of cars that are to be operated in the tunnel trains, when the East Boston Tunnel Alterations are completed.

The general method of doing this has been to build reinforced concrete walls 10 inches wide at intervals of 12 feet along the present platforms and to construct on top of these a reinforced concrete slab, 7 inches in thickness, to serve as the new platform. Part of this work is now being done in each station, leaving enough of the old platform at the lower grade to accommodate the present surface car traffic until the change to train service is made. During the period of time

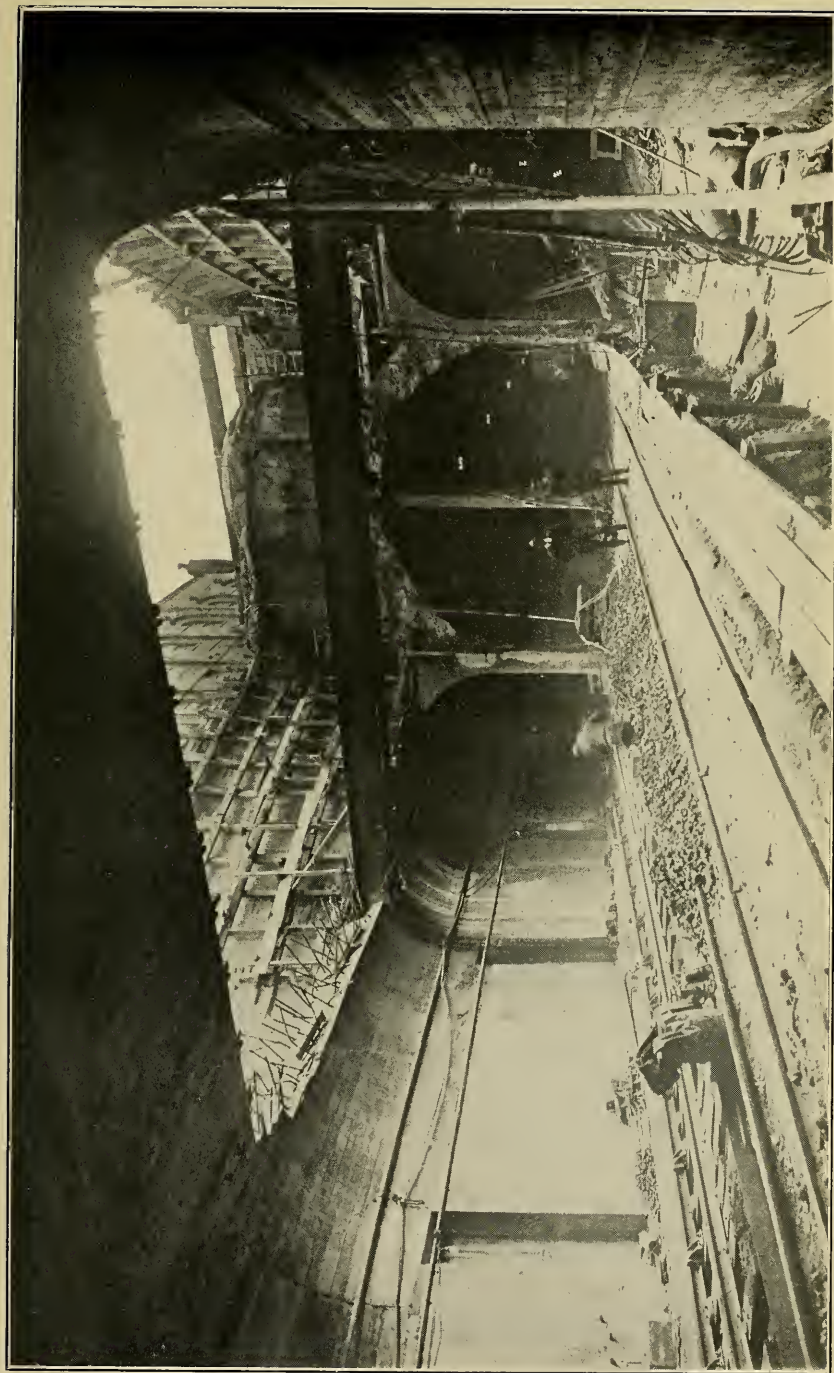


PLATE 6.—VIEW NEAR SOUTH LOOP, LOOKING NORTH, SHOWING NEW INBOUND TRACK ON LEFT, READY FOR OPERATION OF CARS.

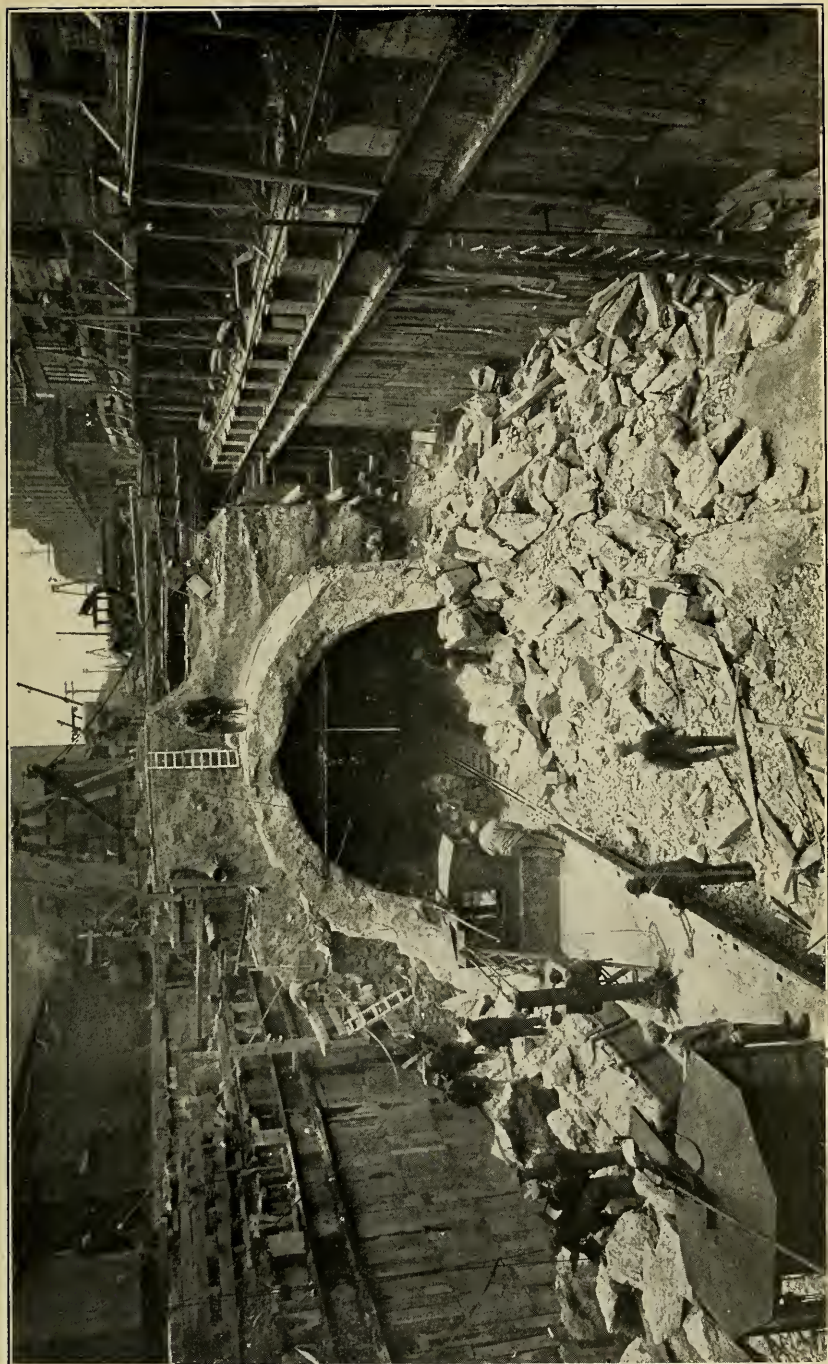


PLATE 7.—REMOVAL OF CONCRETE AFTER BLASTING.

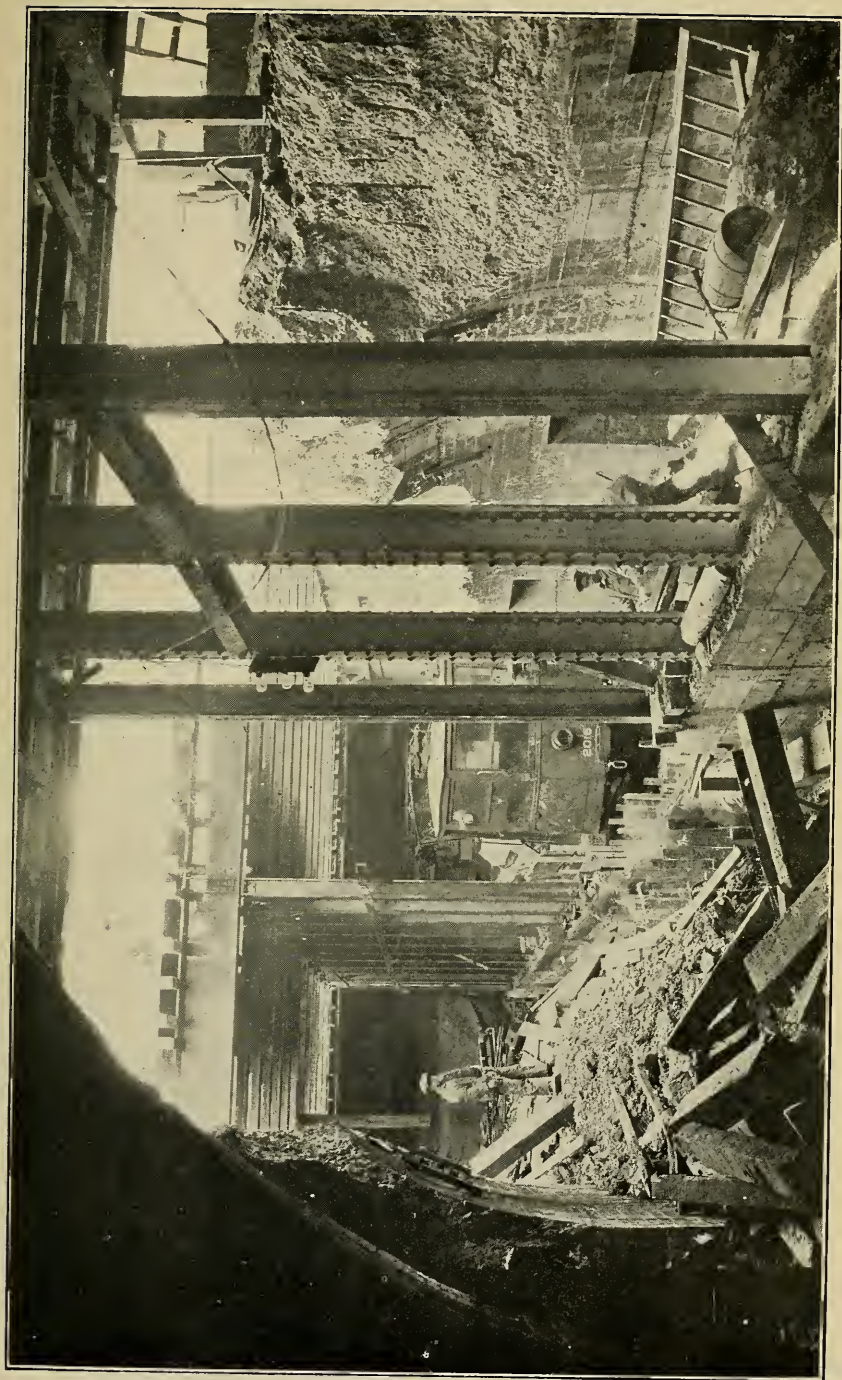


PLATE 8.—STEELWORK FOR NEW STATION BEING ERECTED AS CROWN OF ARCH IS REMOVED.

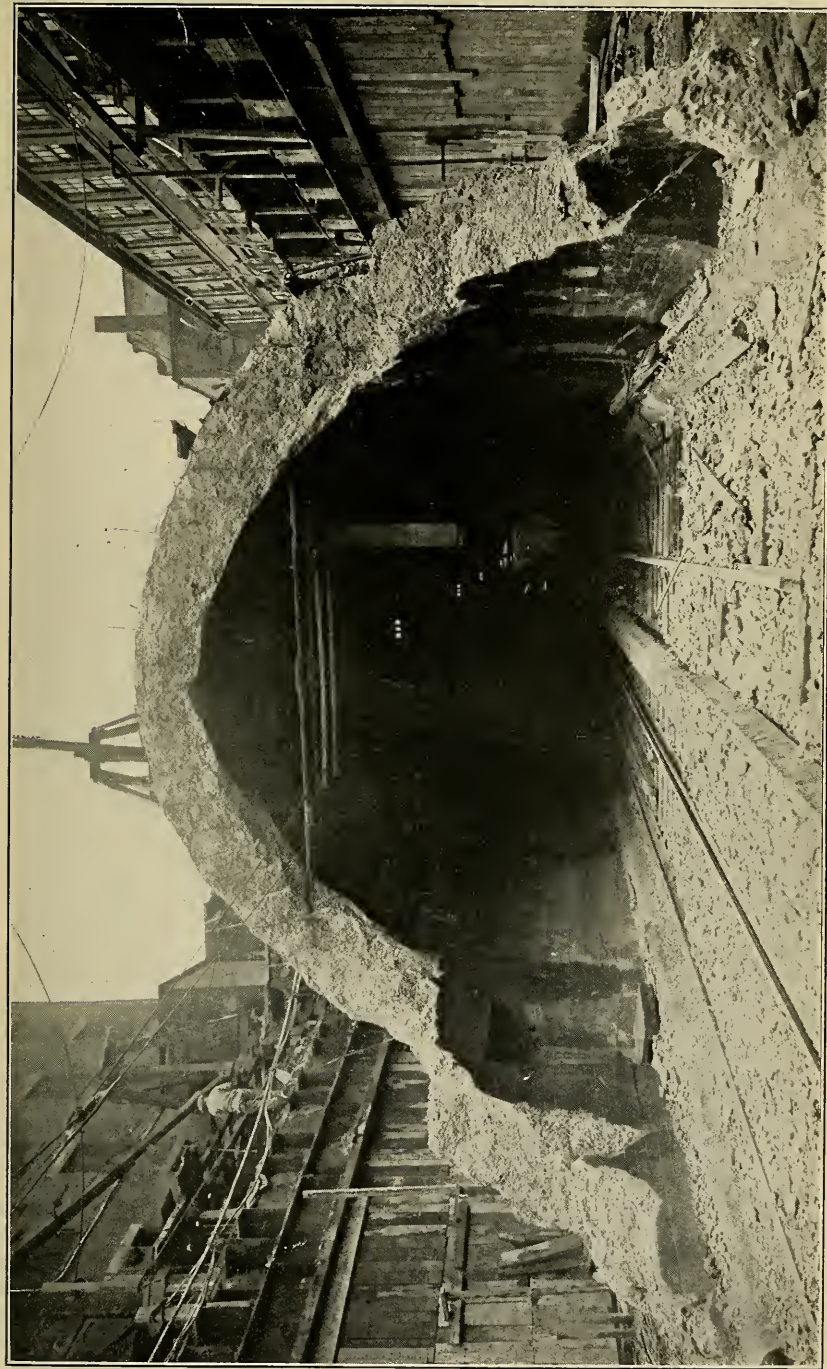


PLATE 9.—SECTION OF OLD TUNNEL, AFTER CARS WERE RUNNING IN NEW FINISHED PORTIONS OF
STATION UNDER BUILDINGS ON BOTH SIDES.

allowed for changing the service from surface cars to trains it is planned to build enough temporary wooden platforms adjoining the new high platforms to allow room for two trains of two cars each. After the trains are running, concrete will be substituted for the wooden platforms, doing the work in short sections at a time. The remainder of the platform will also be brought up to the new grade at the same time.

The work will require many changes in stairways, doors, electric switches, etc., in all of the stations. One stairway from Scollay Under to Brattle Station will have to be removed in account of lack of headroom. Changes will be necessary in the escalator at Scollay Under and in the elevator arrangements at Atlantic Station.

The work was begun December 10 at Bowdoin Station and at the date of this report is being actively prosecuted in Bowdoin, Scollay Under, Devonshire and Atlantic stations. The sand and crushed stone for the work are being brought in on cars of the Boston Elevated Railway Company.

EXTENSION OF DEVONSHIRE STATION.

This work was described in the last annual report. The side walls and sewers were first built. The excavation for the roof required the bridging of the street in order to maintain traffic. The old reinforced concrete roof was cut out in sections, by drilling and wedging. The new roof beams, about 44 feet in length, were placed in position during the night time. The roof, which was of reinforced concrete, was poured during the day time. Waterproofing the roof and covering with a concrete protection layer followed, after which the roadway was backfilled and repaved with granite blocks on a concrete base. One half of the street was kept open for traffic at all times.

The old walls of the tunnel were next removed by drilling during the day time and blasting with light charges of dynamite during the night time between 1:30 A. M. and 4:30 A. M. The broken concrete was removed in work cars.

The platforms were built of reinforced concrete at a high level for trains, as it is not contemplated to use them until the new train service is in operation.

Ribbed tile was placed on the walls similar to that described above at Maverick Station, as the station walls and ceiling are to have a white plaster finish.

CHANGES IN STAIRWAYS AND PASSAGEWAY AT BOWDOIN STATION.

The raising of the platforms at Bowdoin Station described above necessitated the raising of the roof at the foot of the two stairways to the west-bound track, to give additional head room. The old concrete roof was therefore cut out and a new concrete roof put in at a higher grade.

This work was started in the fall and is completed with the exception of the plaster finish, which is about to be put on. The work was done by excavating from the street surface in Bowdoin Square. After the necessary cutting was done and the new work completed the trench was backfilled and the street repaved.

The ramp from the ticket office lobby to the east-bound platform at Bowdoin Station was lowered to meet the proposed grade of the new platform, thereby doing away with the stair way at the end of the ramp. The old granolithic was cut out and the new substituted in short sections, the grade at the lower end being about 14 inches below the old grade. Some excavation was thus necessary. This work was begun November 19 and completed January 23 with the exception of the sanitary base along the walls of the ramp which will be placed when other repairs to the station finish are made.

The work on these stations has been done by employees of the Department, under the direction of Assistant Engineer Robert B. Farwell.

CAMBRIDGE CONNECTION

ENLARGEMENT OF PLATFORM AND STAIRWAY, PARK STREET UNDER.

The existing stairway at Park Street Station from the west-bound platform to the south-bound upper platform is 5 feet in width and frequently badly congested. To relieve this condition a new stairway 10 feet wide is to be built in place of the old. The lower platform in the vicinity of the stairway will be made 20 feet wider than at present and from either side stairways 6 feet wide will lead to the new 10-foot stairway.

This stairway is located at a point under Boston Common just west of the main entrance building of the station. By

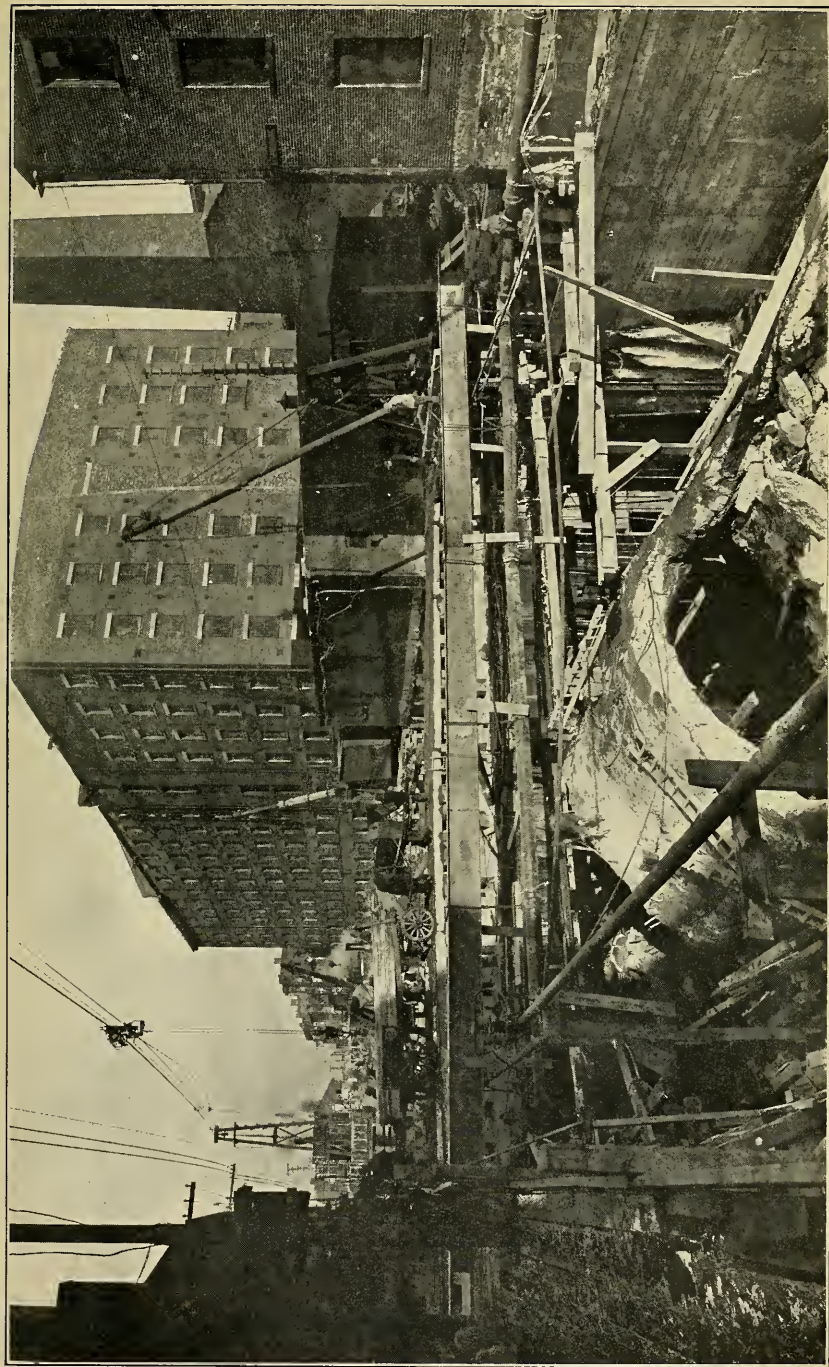


PLATE 10.—GENERAL VIEW NEAR RAILROAD CROSSING.

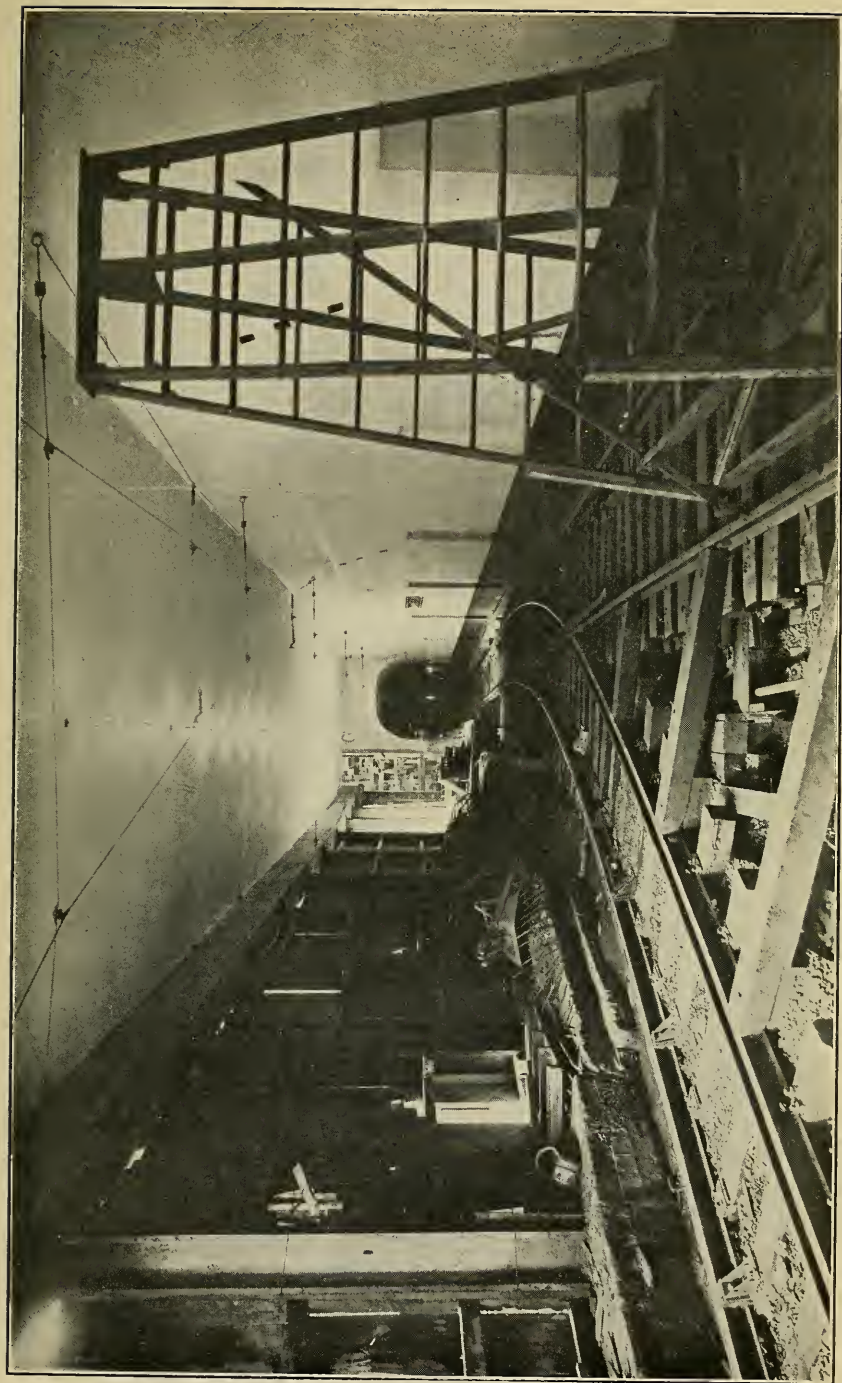


PLATE 11.—FINISHED CEILING AND WALLS NEAR TEMPORARY CROSSOVER.

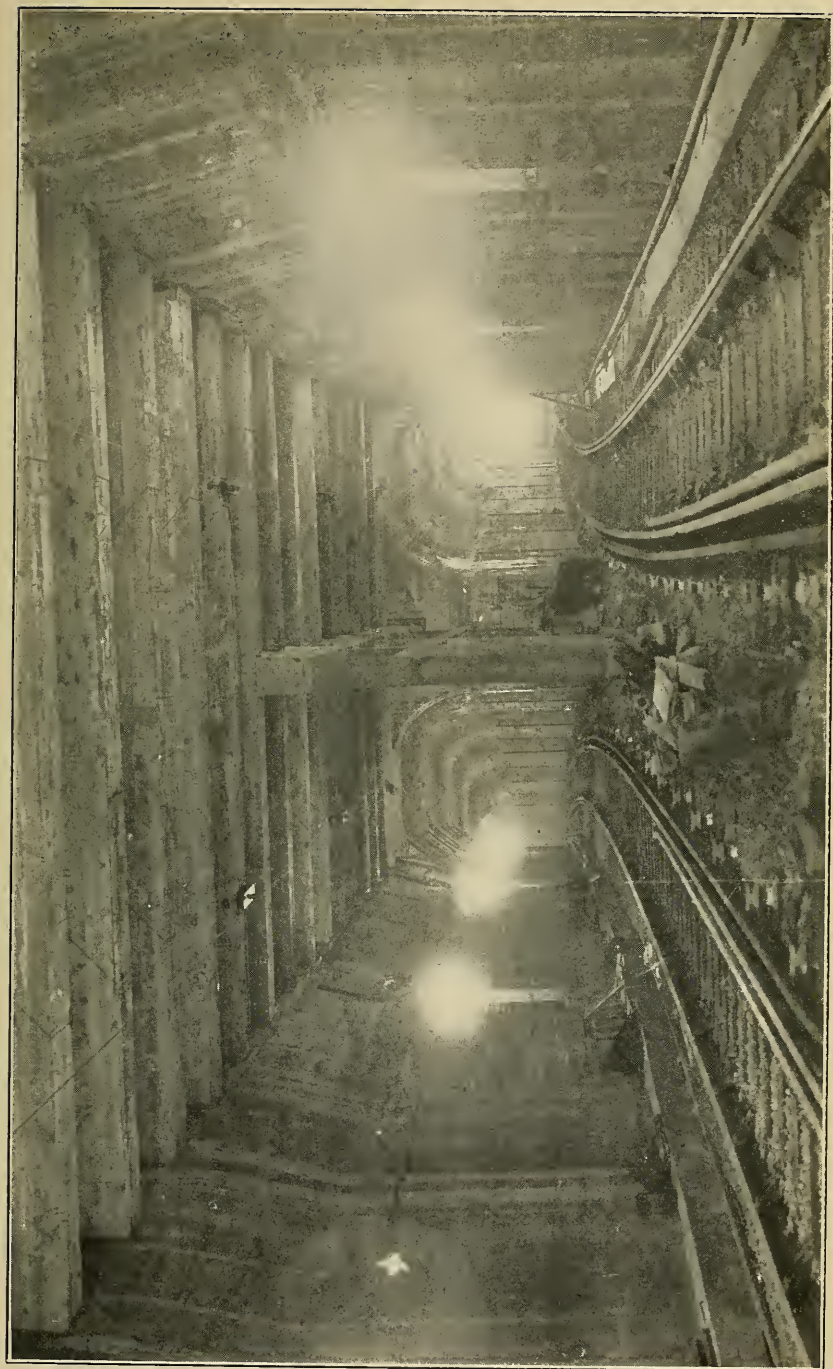


PLATE 12.—NEW SUBWAY UNDER CHELSEA STREET.

sinking a shaft at this point it was possible to do considerable work outside the present walls of the station before breaking through and disturbing the interior. Excavation for this shaft was begun on November 2. This excavation was carried to the bottom at a depth of about 40 feet and then carried under the invert of the westerly south-bound track of the upper station.

Most of the westerly side wall, which is of reinforced concrete, has now been built. The concrete in the platform of the upper station over the new stairway is being removed at the present time.

About 6,000 square feet of the Common are being occupied for storage space during construction. This space was fenced in and a field office for engineers built.

The work is being carried on by employees of this Department, under the direction of Assistant Engineer Robert B. Farwell.

STOCKYARD AT C AND CYPHER STREETS, SOUTH BOSTON.

This yard has been used as in former years for the storage of materials, tools and equipment that have been supplied to the various construction jobs mentioned above.

All of the structural steel has been received and fabricated in the steel shop which is located in the yard, and has later been erected in the field by the iron-workers sent out from the shop.

Reinforcing rods for work in the city proper are stored here and bent to shape as required for the work.

Equipment and materials no longer needed on the East Boston work have been returned to the yard for storage. The equipment returned thus far has consisted of a number of derricks, mixers, pumps, jacks, etc. The materials returned for storage have been heavy timbers and blocking formerly used for underpinning.

The yard and shops are in charge of Assistant Engineer Samuel C. Lyman.

TESTING MATERIALS.

The cement and waterproofing materials were tested this year, as in the year previous, by Mr. C. N. Ryan, Cement Tester, Public Works Department, at City Hall, and by Mr.

L. Y. Waterhouse, Chemist, Public Works Department, also at City Hall, respectively. The reinforcing rods were tested by J. R. Worcester & Co.

ENGINEERING FORCE.

The names of those members of the Engineering Division employed for more than one month are given in Appendix D.

Respectfully submitted,

ERNEST R. SPRINGER,
Chief Engineer.

APPENDIX A.

[CHAPTER 480.]

AN ACT PROVIDING FOR THE EXTENSION OF RAPID TRANSIT FACILITIES IN
THE DORCHESTER DISTRICT OF THE CITY OF BOSTON.

Be it enacted, etc., as follows:

SECTION 1. The following words as used in this act shall, unless the context otherwise requires, have the following meanings:—

“City” shall mean the city of Boston.

“Company” shall mean the Boston Elevated Railway Company, its successors and assigns. During the period of public control the board of trustees of the Boston Elevated Railway Company shall have and exercise all the powers of the company under this act.

“Department” shall mean the transit department of the city of Boston, or such board or officers as may succeed to its rights and duties.

“Premises” shall mean the property authorized to be acquired by the department under the provisions of section two, except the extension of the Dorchester tunnel and incline.

“Equipment” shall mean the property which the department is authorized to provide and furnish under the provisions of section three.

Whenever any act is required or authorized to be done or performed by the department, such action shall be in the name of and on behalf of the city of Boston, and whenever any action is required or permitted to be taken by the city, such act shall be performed by the department, unless otherwise expressly provided.

SECTION 2. The department shall extend the Dorchester tunnel from its present terminus at or near Andrew square in that part of the city known as South Boston, through and under Boston street, private land, land now or formerly of the Old Colony Railroad Company, Power street and Dorchester avenue, bringing said tunnel to the surface by an incline south of Dorchester avenue and parallel to and on the westerly side of the railroad tracks operated by the New York, New Haven and Hartford Railroad Company, and known as the Boston division, at a point between Dorchester avenue and Columbia road, and shall acquire, lay out and construct a line of surface railway connecting with such extension at said incline, and thence running substantially parallel to, along or westerly of the location of said railroad tracks over or under, along and across public and private ways and lands to the junction of said tracks near the present Harrison square station with the tracks operated by said New York, New Haven and Hartford Railroad Company, known as the Shawmut branch; thence running upon and along the location of said Shawmut branch to a point at or near the junction of River street and Blue Hill avenue in that part of the city known as Mattapan. The department shall acquire, lay out and construct at or near Fields Corner, so-called, between Dorchester avenue and Geneva avenue in that part of the city known as Dorchester, or at such other points beyond Fields Corner as may be agreed upon between the company and the department suitable yards, tracks and sheds for the storage, inspection and repair of trains and cars, and shall also lay out and construct suitable areas, enclosed or otherwise, stations and shelters at or near Columbia road, Savin Hill avenue and at such other points as may be agreed upon between the company and the department and an enclosed transfer area and station for the convenient interchange of passengers between trains and cars at or near Fields Corner. For the purpose of avoiding objectionable curves or any

practical or legal obstacles the department may vary or alter the route herein prescribed, and may for the purpose of carrying out the work herein authorized, acquire, lay out and construct or alter approaches, sidings, bridges, viaducts, inclines, yards and incidental railway structures.

The department may make such alterations and changes and additions and extensions to the Dorchester tunnel, at or south of Andrew square, as the department may deem necessary or desirable, and the cost of any alterations, changes, additions and extensions to said tunnel authorized under this act shall be deemed to be and be a part of the cost of said tunnel.

If the said line of surface railway shall run over the location, or a portion thereof, of said main line railroad tracks between Andrew square and Harrison square the city shall acquire a right of way therefor from the said railroad companies, either by purchase or by eminent domain under chapter seventy-nine of the General Laws, and in case of the latter the said corporations shall be entitled to recover compensation for any injury to their property to the same extent as private persons from whom takings may be made for the purposes of said line of surface railway. Said compensation may be made in whole or in part in land, bridges, structures, materials or labor, including alterations on said portion of the main line as may be necessary and proper to put said railroad companies in as good position as they now are for conducting their business, if the parties so agree. The portion of said line of surface railway which may be located upon said main line right of way shall be so designed and constructed that the said railroad companies, or their successors, shall have suitable freight connections with the sidings and freight yards now in use.

If the said line of surface railway shall be constructed in whole or in part upon said Shawmut branch, the city shall acquire by purchase or by eminent domain under said chapter seventy-nine the whole of said Shawmut branch except such part of the portion between Shawmut junction and Central avenue or such interests therein as the department shall determine to exclude from such purchase or taking.

Said line of surface railway shall be so designed and constructed or so operated that the said railroad companies, or their successors, shall have suitable freight connections from the junction of their existing track from Neponset to Shawmut junction with said Shawmut branch to the sidings now in use on said branch between Shawmut junction and Central avenue.

When the Dorchester tunnel extension and said line of surface railway to Mattapan station are completed and ready for operation said railroad companies shall abandon all passenger traffic upon said Shawmut branch and at the Crescent avenue and Savin Hill stations, so-called, on said main line, and shall thereafter be relieved of all duties and obligations relating thereto, and thereupon reasonable and adequate passenger service over said Shawmut branch shall be furnished by the lessee of the premises. Until then said railroad companies shall operate thereat and thereon, except as may be authorized or required by the department of public utilities, at such rental, after the taking or purchase, as shall be agreed upon between the city and the New York, New Haven and Hartford Railroad Company. No taking or purchase by the city from the railroad companies as herein provided shall be made until the department of public utilities shall have formally approved some plan under which reasonably frequent and adequate rapid transit passenger trains or cars can be safely operated over the track from Welles avenue through Shawmut junction to Mattapan. Nothing in this act shall be construed to relieve or prevent the New York, New Haven and Hartford Railroad from operating its freight service from Neponset to Central avenue.

SECTION 3. The department shall provide, equip and furnish that portion of the line of railway authorized by the preceding section extending from the southerly end of said incline to the terminal at Mattapan, including terminals, stations, shelters, enclosed areas, yards and structures appurtenant thereto, with all necessary ballast, tracks, rails, fastenings, frogs, switches, switch stands, ties, tie plates, wires, poles, signals, conduits, lighting and power distribution systems, fences, barriers, station equipment and incidental apparatus, and in general shall completely

equip and furnish the same with all property, appliances, apparatus, machinery, furniture and fixtures proper and adapted thereto and necessary for the convenient maintenance and operation of a railway therein and thereon to Welles avenue; and thence to Mattapan for the convenient maintenance and operation of such type of service as may from time to time be determined upon by the company in compliance with the preceding section, and for the safety and accommodation of passengers using the same.

The extension of the Dorchester tunnel authorized by the preceding section shall, when constructed, be equipped by the company in the same manner in which the rest of said tunnel is equipped.

SECTION 4. The department shall, immediately after the passage of this act, make such preliminary investigations, surveys and plans as it may deem expedient, and to that end may enter upon any lands, and place and maintain marks therein, and may make excavations and borings and do all other acts necessary for such investigations and surveys. The department may expend such sums as it deems necessary therefor. The expenses incurred in making such preliminary investigations, surveys and plans shall be paid from the loans authorized by chapter seven hundred and forty-one of the acts of nineteen hundred and eleven, but if and when the construction is begun hereunder the amount so expended shall be transferred and charged to the cost of such construction. The work of construction, however, shall not be begun until the department has filed with the commissioner of public works of the city a plan signed by the department showing the proposed route and the location thereof, the general form and method of construction, the location and equipment of proposed tracks, stations and approaches, and the alignment and grade, which plan shall be submitted to the company for its examination, nor until the contract hereinafter mentioned for the use of the premises and its equipment has been executed. Any such plan so filed may be altered at any time before the execution of said contract by a new plan signed, submitted and filed in like manner; but after execution of said contract no changes shall be made without the consent of the company thereto in writing.

The work of construction shall not be begun until such plan or alteration thereof shall, so far as it covers work in, or directly affecting the operation of, the said portions of the main line tracks between Andrew square and Harrison square have received the approval of said railroad companies, or of the department of public utilities, nor shall any such changes be made in such plan after the beginning of construction without such approval.

SECTION 5. The department is hereby authorized to execute a contract with the company upon terms and conditions herein prescribed for the use of the premises and equipment by the company for the running of trains and cars therein and thereon, and for such other uses as the department and the company may agree upon, for a term which shall extend from the beginning of the use of the premises and equipment to the time of the termination of the present lease of the Dorchester tunnel, at a rental during said term at the rate of four and one half per cent per annum upon the fair and reasonable cost, as determined by the department of public utilities, of the premises and equipment; provided, however, that the annual rental shall be sufficient to provide for an amount equal to one half of one per cent of said cost in addition to the annual amount of interest on the bonds issued to pay for said cost, but not less than said four and one half per cent in any event. The use of the premises and equipment by the company shall begin upon certification by the department of public utilities that the premises and equipment are in safe and proper condition for operation. The contract shall provide that all equipment shall be maintained and kept by the company in proper repair and condition, and shall contain such provisions for depreciation, obsolescence and losses as may be agreed upon by the department and the company, or, in case of difference, as the department of public utilities may determine. The contract shall also contain such other provisions and conditions not affecting the

term of rental, and following the form of the contract for the use of the Dorchester tunnel so far as the same may be applicable, as the department and the company may agree upon, or, in case of difference, as the department of public utilities may determine.

The cost of the premises and equipment shall be deemed to include, except as otherwise provided herein, all expenditures incurred in acquisition and construction, including damages, expenses, such proportion of the salaries of the department as may in its opinion be properly chargeable thereto, and interest on the debt incurred for the acquisition and construction of the premises and equipment prior to the beginning of the use by the company.

SECTION 6. For the purpose of carrying out the provisions of this act, the department may use public ways and lands without compensation therefor, and may take by eminent domain under said chapter seventy-nine, or acquire by purchase or otherwise, for and on behalf of the city, lands in fee and easements, estates and rights in land, including any and all lands, easements and rights owned by any railroad company, and the right to go under or over the surface thereof or through or under buildings or parts of buildings thereon; and such taking in fee or otherwise may be made whether the lands taken or otherwise affected are held under or by title derived under eminent domain or otherwise, and may be made for the purpose of providing locations for pipes, wires, conduits and other structures, the relocation of which is made necessary or expedient by the construction authorized by this act. A taking under this section of an easement or other estate or right in a given parcel of real estate, whether such parcel consists of unimproved land or of land and buildings, may be confined to a portion or section of such parcel fixed by planes or other surfaces of division below, above or at the surface of the soil; and in such case no taking need be made of upper or lower portions or sections, except of such easements therein, if any, as the department may deem necessary.

SECTION 7. The department may sell the buildings and other structures upon any lands acquired by it, or may remove the same; and shall sell, if a sale be practicable, or if not shall lease, any lands or rights or interests in land or other property acquired for the purposes of this act whenever the same shall, in the opinion of the department, cease to be needed for such purposes. The proceeds of such sales and leases, and the fair valuation of any such lands or other property no longer needed for the said purposes but not actually sold, as agreed upon by the department and the company, or, in case of difference, as determined by the department of public utilities, shall, for the purpose of ascertaining the rental thereof, be deducted from the cost of the premises, except that the proceeds from the sales or leases of land acquired for the Dorchester tunnel extension shall be credited to the cost of the Dorchester tunnel.

SECTION 8. Any person sustaining damage by reason of property or rights in property taken or injured by the department under authority of this act, except public ways or lands, shall be entitled to recover the same from the city under said chapter seventy-nine. The members of the department shall not be liable personally for any such damage.

SECTION 9. The department may order the removal or relocation of any surface tracks, and the removal or relocation of any conduits, pipes, wires, poles or other property located in public ways or places which it deems to interfere with the construction or operation of the premises authorized by this act, and shall grant new locations for any such structures so removed or relocated. Such orders, to the extent specified therein, shall be deemed a revocation of the right or license to maintain such tracks, conduits, pipes, wires, poles or other property in such public ways or places, and the owner of any such structures shall comply with the said orders without expense to the city. If any such owner shall fail to comply with the order of the department within a reasonable time, to be fixed in the order, the department may discontinue and remove such tracks, conduits, pipes, wires, poles or other property and may relocate the same, and the cost of such discontinuance, removal or relocation shall be repaid to the

city by the owner. No such discontinuance, removal or relocation shall entitle the owner of the property thus affected to any damages on account thereof. Any such structures in or upon private lands may be removed and relocated by the department, or if removed and relocated by the owner thereof the reasonable expense shall be paid to him by the department. Any gas or electric lighting company may shut off the gas or current from any pipes or wires affected by any acts done hereunder, so far as may be necessary to avoid danger of escape or explosion of gas, or other public danger.

No provisions in this section shall be held to be in derogation of the provisions of section two relative to the rights of the Old Colony Railroad Company or of the New York, New Haven and Hartford Railroad Company in case of a taking or use of the portion of their main line tracks specified in said section two.

SECTION 10. All work done under this act, under or near public streets and places, shall be conducted, so far as may be practicable, in such manner as to leave such streets and places, or a reasonable part thereof, open for traffic between the hours of seven in the forenoon and six in the afternoon of each secular day, except legal holidays.

SECTION 11. The treasurer of the city shall from time to time, on request of the department, and without further authorization than herein contained, issue and sell at public or private sale the bonds of the city, registered or with interest coupons attached, as he may deem best, to an amount not exceeding the cost of carrying out the provisions of this act. Such bonds shall be designated on their face Dorchester Rapid Transit Bonds; shall be for such terms, not exceeding forty-five years, as the mayor and treasurer of the city may determine; and shall bear interest payable semi-annually, at such rate as the treasurer shall determine. The proceeds of such bonds, including any premiums realized from the sale thereof, shall be used to meet all damages, cost and expenses incurred by the department or by the city in carrying out the provisions of this act. The proceeds from any sale or sales of lands or rights taken or acquired by purchase or otherwise shall be used for the same purpose as the rentals of said premises and equipment, or shall be used for the payment of expenditures incurred for construction, as the department may determine, and all rentals, tolls, percentages or other compensation received by the city under the provisions of this act shall be used in the first instance for the payment of interest on the bonds herein authorized, and the balance shall be used for the payment of the principal of said bonds. Any interest received by the city upon the proceeds of the bonds prior to the expenditure of such proceeds shall be credited against interest during construction in ascertaining the net cost of the premises and equipment. The city shall have, hold and enjoy in its private or proprietary capacity, for its own property, the said premises and equipment, and all rents, tolls, income and profits from all contracts entered into by it for the use of said premises or equipment or any part thereof, and the same shall never be taken by the commonwealth except on payment of just compensation.

Debts incurred by the city for the purposes of this act shall not be considered in determining the statutory limit of indebtedness of the city.

SECTION 12. In respect to the use and operation of the premises and equipment the company shall have all the powers and privileges and be subject to all the duties, liabilities, restrictions and provisions set forth in general and special laws now or hereafter in force applicable to it. To provide for proper connections with the premises the company may make such alterations or extensions of its tracks and locations as the department may approve.

SECTION 13. The contract for the use of the premises and equipment executed in accordance with the authority conferred by this act shall not in any respect impair any right which the commonwealth or any political sub-division thereof may at any time have to take the railway properties of the Boston Elevated Railway Company or any right which the commonwealth or any political sub-division thereof has under section sixteen of

chapter one hundred and fifty-nine of the Special Acts of nineteen hundred and eighteen. In the event of such taking the compensation to be paid to the company shall not be enhanced by reason of such contract, nor shall it be diminished because of the fact that without it properties might be cut off.

SECTION 14. Section four of this act shall take effect upon its passage. The remaining provisions of this act shall take effect upon its acceptance by vote of the city council of the city of Boston, subject to the provisions of its charter, and by the Boston Elevated Railway Company by vote of its board of directors, and upon agreement by the Old Colony Railroad Company as owner and the New York, New Haven and Hartford Railroad Company as lessee to accept in payment for said Shawmut branch, free of all encumbrances except such right for freight connections as may be reserved under section two, whether said branch shall be acquired by eminent domain, purchase or otherwise, such sum, not exceeding one million dollars, as the department of public utilities after public hearing shall have previously determined to be just and reasonable and upon agreement by said companies that there may be deducted or repaid from such sum the amounts of any judgment or judgments, in any proceedings for the taking of the whole or any part or parts of said branch in fee, in favor of any other person for any interest at the date of the taking in the property so taken; provided that such acceptances and agreement are made on or before May first, nineteen hundred and twenty-four. Such acceptances and such agreement shall be evidenced by certificates thereof filed with the secretary of the commonwealth.

SECTION 15. All construction work authorized under this act shall be open to competitive bidding, shall be advertised in a reasonable number of newspapers for proposals for the performance of such work, and shall be awarded to the lowest responsible and eligible bidder, and written contracts shall be made with such bidder,—except to the extent that it may prove impracticable because of reasons special and peculiar to this work and may be otherwise authorized, in writing, by the department of public utilities.

[Approved May 25, 1923.]

APPENDIX B.

[CHAPTER 405.]

AN ACT TO PROVIDE FOR THE ACQUISITION BY THE CITY OF BOSTON OF STREET RAILWAY LINES IN THE HYDE PARK DISTRICT AND THE OPERATION THEREOF BY THE BOSTON ELEVATED RAILWAY COMPANY.

Be it enacted, etc., as follows:

SECTION 1. When used in this act —

“City” shall mean the city of Boston.

“District” shall mean that part of the city formerly within the boundaries of the town of Hyde Park, together with that part of River street which extends from the old Hyde Park-Boston line to Mattapan square.

“Company” shall mean the Boston Elevated Railway Company.

“Premises” shall mean the property leased to the company by the city under the provisions of this act.

“Transit department” shall mean the transit department of the city of Boston, or such other board or officers as may succeed to its rights and duties.

SECTION 2. The city, acting through its transit department, and without other authority than that contained in this act, may at any time before January first, nineteen hundred and twenty-four, purchase or take by eminent domain the following property within the district: — all street railway lines, tracks and locations, including ties, rails, special work, joints, tie plates, fastenings, ballast, paving and brow stones, also all trestles, bridges and other structures for the support of said tracks; all pole and line construction, including all poles, trolley wires, span wires, feeders, telephone and telegraph systems appurtenant to said lines, signals and appurtenances, underground conduits, power houses, and equipment physically attached thereto and forming part thereof, and car barns and equipment attached thereto and forming part thereof.

SECTION 3. The taking or takings by eminent domain authorized herein shall be made and damages therefor determined and paid under and in accordance with chapter seventy-nine of the General Laws, except that petitions for the assessment of damages may be filed in the superior court for any of the following counties: — Suffolk, Norfolk or Middlesex. The right to damages as against the city for such taking or takings of any property owned by the Eastern Massachusetts Street Railway Company shall vest in said company. The city, acting by its transit department, with the approval of the mayor, may make payment for damages for all property taken under authority of this act out of the proceeds of bonds issued by the city under the provisions of section seven, but if the amount of the proceeds available from such bonds is insufficient to pay the full amount of such damages, the city shall nevertheless be liable for such damages, irrespective of any legal limit of indebtedness previously provided by law.

SECTION 4. Before acquiring any property under authority of this act, the transit department in the name and on behalf of the city, shall execute a contract in writing with the company upon such terms and conditions, not inconsistent with the provisions of this act, as the transit department and the board of trustees of the company may agree upon, for the use by the company of the property proposed to be acquired, or so much thereof as shall appear to the board of trustees of the company to be necessary or convenient for the operation of street railway lines in the district, for a term beginning with the use of the premises by the company and extend-

ing to the termination of the period of public control of the company under the provisions of chapter one hundred and fifty-nine of the Special Acts of nineteen hundred and eighteen and acts in amendment thereof. The company shall pay for the use of the premises a rental at the rate of four and one half per cent per annum upon the fair and reasonable value of the premises for street railway purposes as agreed upon by the transit department and the company, or, in case of difference, as determined by the department of public utilities. In case the company shall be kept out of possession or deprived of the use of the premises, or any part thereof, by any act on the part of the city or of any person or corporation claiming an adverse interest in said premises, the rental or a just and reasonable part thereof as agreed upon by the transit department and the company, or, in case of difference, as determined by the department of public utilities, shall be suspended or abated during the time the company is so kept out of possession or deprived of the use of the premises, or any part thereof. In case the city shall, during the term of such contract, reimburse the company for capital expenditures upon the premises as provided in section five, the amount of such reimbursement shall be added to the fair and reasonable value of the premises for street railway purposes for the purpose of determining the rental thereafter payable by the company for the use of the premises.

SECTION 5. Said contract for use shall require the return of the premises to the city at the termination of said use in as good order and condition as at the beginning, and shall provide that the company may from time to time make such alterations, replacements, additions and improvements in and to the premises as the company shall deem to be necessary or advisable to put the premises in good operating condition; provided, however, that no such alterations, replacements, additions or improvements shall be made, except in case of emergency, without the written consent of the transit department or a certificate from the department of public utilities that the proposed work is reasonably necessary or advisable to put the premises in good operating condition. In case of any such alteration, replacement, addition or improvement, the department of public utilities shall on application of the company determine what proportion thereof, if any, would, under the standard system of accounting prescribed for street railways by the interstate commerce commission and adopted by the department of public utilities, constitute a proper charge against capital, and the city shall thereupon pay the same to the company. If the city shall not make said payments when due, the company shall be entitled to deduct the amount thereof, with interest, from any rental subsequently payable to the city for the use of the premises.

SECTION 6. There shall be made as of the date when the use of the premises by the company begins and as of the date when the use terminates, a full and complete inventory, description and valuation of the premises by a board of three persons, one appointed by the transit department, one by the company, and the third chosen by the two so appointed or, in case of their failure to agree upon a third person, by the governor. In case the valuation so made as of the date when the use begins plus all capital improvements and betterments for which the company has been reimbursed by the city shall exceed the valuation at the termination of the use, the company shall pay over to the city an amount equal to such excess, and in case such valuation as of the date when the use begins plus all capital improvements and betterments for which the company has been reimbursed by the city, is less than the amount of the valuation at the termination of the use, the city shall pay over to the company an amount equal to such deficit.

SECTION 7. The treasurer of the city shall from time to time, on request of the transit department, and without further authorization than herein contained, issue and sell at public or private sale the bonds of the city, registered or with interest coupons attached, as he may deem best, to an amount not exceeding the cost of carrying out the provisions of this act. Such bonds shall bear on their face the words, Hyde Park Street Railway Loan, shall be for such terms not exceeding forty-five

years, as the mayor and treasurer of the city may determine; and shall bear interest payable semi-annually, at such rate as the treasurer shall determine. The proceeds of such bonds, including any premium realized from the sale thereof, shall be used to meet all damages, cost and expenses incurred by the transit department or by the city in carrying out the provisions of this act. The board of commissioners of sinking funds of the city shall establish a sinking fund for the payment of the bonds issued under this act. The proceeds from any sale or sales of property taken, or acquired by purchase or otherwise, under authority of this act shall be used for the same purpose as the rental of said premises or shall be used for the payment of expenditures incurred for the acquisition of said property, as the transit department may determine. All rentals, tolls, percentages or other compensation received by the city under the provisions of this act shall annually be used by the treasurer of the city, first, to meet the requirements of any deficiency in the said sinking fund; second, to meet the interest on said bonds; and the surplus, if any, as a part of the general revenue of the city. The city shall have, hold and enjoy in its private or proprietary capacity, for its own property, the property acquired by it under the provisions of this act, and all rents, tolls, income and profits from all contracts entered into by it for the use of said property or any part thereof, and the same shall never be taken by the commonwealth except on payment of just compensation.

Debts incurred by the city for the purposes of this act shall not be considered in determining the statutory limit of indebtedness of the city.

SECTION 8. In respect to the use and operation of the premises, the company shall have all the powers and privileges and be subject to all the duties, liabilities, restrictions and provisions set forth in general and special laws now or hereafter in force applicable to it. To provide for proper connections with the premises, the company may make such alterations or extensions of its tracks and locations as the transit department may approve.

SECTION 9. The contract for the use of the premises executed in accordance with the authority conferred by this act shall not in any respect impair any right which the commonwealth or the city of Boston or any other licensee of the commonwealth may at any time have to take the railway properties of the Boston Elevated Railway Company. In the event of such taking, the compensation to be paid to the company shall not be enhanced by reason of such contract, nor shall it be diminished because of the fact that without it properties might be cut off.

SECTION 10. This act shall take effect upon its acceptance by vote of the city council of the city of Boston, approved by the mayor, and the filing of a certificate evidencing such acceptance with the secretary of the commonwealth. For the purpose of such acceptance, this act shall take effect upon its passage.

[Approved May 17, 1923.]

APPENDIX C.

[CHAPTER 399.]

AN ACT ESTABLISHING THE DIVISION OF METROPOLITAN PLANNING WITHIN THE METROPOLITAN DISTRICT COMMISSION.

Whereas, The deferred operation of this act would unnecessarily postpone the inception of certain improvements of great advantage to the metropolitan district and the commonwealth, therefore this act is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Be it enacted, etc., as follows:

SECTION 1. Chapter twenty-eight of the General Laws is hereby amended by adding at the end thereof the two following new sections:—

Section 5. There shall be organized within the metropolitan district commission a division of metropolitan planning. Said division shall be in charge of seven commissioners, three of whom shall be appointed by the governor, with the advice and consent of the council, for terms of five years from the date of their respective appointments and without compensation; an associate commissioner of public works, to be designated from time to time by the commissioner of public works; a commissioner of the department of public utilities, to be designated from time to time by the chairman of said department; an associate commissioner of the metropolitan district commission, to be designated from time to time by the commissioner of said commission; and an officer of the transit department of the city of Boston, to be designated from time to time by the chairman thereof. The chairman of said division shall be designated by the governor. *Section 6.* Said division shall investigate and make recommendations as to transportation service and facilities within the district consisting of all the cities and towns in the metropolitan sewer districts, and the metropolitan parks district, and the co-ordination thereof upon highways, roads, bridges, waterways, railroads, street railways and other arteries of traffic; the manner of effecting such co-relationship and what improvements and new facilities should be provided for a comprehensive and co-ordinated development of transportation for said district. It shall confer with the local planning agencies in the district with regard to such projects as are not of an exclusively local character. It shall recommend the method of carrying into effect and financing the projects recommended by it, and shall make such maps, plans and estimates of cost as may be needed for its investigations and reports, and may employ such assistants therefor as it deems necessary. The various other departments, boards and divisions of the commonwealth, the public trustees, respectively, of the Boston Elevated Railway Company and of the Eastern Massachusetts Street Railway Company, the street commissioners, planning boards and other officials of cities and towns comprising said district, and the various public utilities operating therein may consult with it and furnish all facts and information requested within their knowledge or control.

The division shall annually submit to the budget commissioner the estimates required by sections three and four of chapter twenty-nine, and shall prepare and file an annual report as required by sections thirty-two and thirty-three of chapter thirty.

SECTION 2. The said division may, for the current fiscal year, expend for clerical, engineering, expert and other assistance and for incidental expenses such sums, not exceeding fifteen thousand dollars, as may be appropriated by the general court, the same to be assessed upon the metropolitan parks district.

SECTION 3. Chapter four hundred and six of the acts of nineteen hundred and twenty-two is hereby amended by striking out from the beginning thereof down to and including the word "The" in the third line and inserting in place thereof the words:—The metropolitan district,—and also by inserting after the word "thirty-one" in the ninth line the words:—of the General Laws.

[Approved May 16, 1923.]

APPENDIX D.

Year ending January 31, 1924.

The names of those who have been employed in the Engineering Division for more than one month during the period covered by this report are given below, together with an indication of the principal work upon which they have been engaged.

ARTHUR B. CARTER, *Secretary to the Chief Engineer.*

*EILEEN P. BURKE, *Clerk and Stenographer.*

*WILLIAM G. COUGHLIN, *Clerk and Stenographer.*

KATHERINE I. DRISCOLL, *Clerk and Stenographer.*

THOMAS J. PETTIT, *Clerk and Stenographer.*

JEREMIAH P. DRISCOLL, *Clerk.*

MARY E. MCKERNAN, *Clerk.*

MABEL A. MURPHY, *Stenographer.*

†JAMES W. GIBBONS, *Paymaster.*

WILLIAM W. LEWIS, *Assistant Engineer.*

General office work and in charge of surveys and field work for extension of Dorchester Rapid Transit facilities.

LEONARD B. HOWE, *Assistant Engineer.*

In charge of engineering office and all designs and details for structural steel and reinforced concrete structures.

*FRANCIS V. CAREY, *Assistant Engineer.*

Designs for structural steel and reinforced concrete structures.

JOSEPH W. PARKER, *Assistant Engineer.*

Designs for structural steel and reinforced concrete structures.

JOHN A. BERRIGAN, *Assistant Engineer.*

Plans for East Boston Tunnel Alterations and Studies for extension of Dorchester Rapid Transit facilities.

JAMES D. BURNS, *Assistant Engineer.*

Plans for steel work for East Boston Tunnel Alterations and surveys for extension of Dorchester Rapid Transit facilities.

JOSEPH P. DEVER, *Assistant Engineer.*

Studies, estimates and field work on East Boston Tunnel Alterations, on raising platforms in stations and stairway alterations at Park Street Station.

RALPH A. FISHER, *Assistant Engineer.*

Designs and details for steel work for East Boston Tunnel Alterations and for extension of Dorchester Rapid Transit facilities.

ARTHUR V. LYNCH, *Assistant Engineer.*

Designs and detail plans for East Boston Tunnel Alterations; in charge of party making surveys for extension of Dorchester Rapid Transit facilities.

* Left the employ of the Transit Department.

† Employed only part of the time.

FRANCIS R. MACLEAY, *Assistant Engineer.*

Studies for extension of Dorchester Rapid Transit facilities.

HERBERT R. STEARNS, *Assistant Engineer.*

Designs and detail plans for East Boston Tunnel Alterations and studies for extension of Dorchester Rapid Transit facilities.

HAROLD F. MARNELL, *Transitman.*

Studies for extension of Dorchester Rapid Transit facilities.

EDWARD G. A. POWERS, *Transitman.*

Drafting and field work, stairway alterations at Park Street Station.

FRANK A. RULL, *Transitman and Photographer.*

Blueprinting, photography and surveys.

JOHN F. HOWARD, *Blueprinter.*

RICHARD F. TOBIN, *Blueprinter.*

WILBUR W. DAVIS, *Assistant Chief Engineer.*

In charge of construction of East Boston Tunnel Alterations in Maverick Square.

ROBERT B. FARWELL, *Assistant Engineer.*

In charge of construction work of stairway alterations at Park street, of Devonshire Station extension and of raising platforms in stations of East Boston Tunnel.

LEO S. STONE, *Assistant Engineer.*

Construction and station finish work of East Boston Tunnel alterations and of raising platforms in stations of East Boston Tunnel.

FREDERICK C. H. EICHORN, *Assistant Engineer and Inspector.*

General construction work; East Boston Tunnel Alterations, Maverick Square.

LESTER S. DANIELS, *Assistant Engineer.*

Lines and grades; East Boston Tunnel Alterations, Maverick Square.

ROBERT K. TAYLOR, *Assistant Engineer.*

Progress plans, rod schedules and placing; in charge of night work; East Boston Tunnel Alterations, Maverick Square.

*HILLARD C. DONOVAN, *Transitman.*

FRANCIS D. SULLIVAN, *Transitman.*

THOMAS E. CARNEY, *Rodman.*

JOHN J. RYAN, *Rodman.*

JOHN J. FARREN, *Construction Cost Accountant.*

JOHN J. BRADLEY, *Clerk (Timekeeper).*

*BARTLEY J. CURRAN, *Clerk.*

FREDERICK W. GOW, *Transitman.*

ALBERT I. McDERMOTT, *Transitman.*

*FRANCIS J. MURPHY, *Transitman.*

FREDERIC W. STILES, *Transitman.*

Construction of East Boston Tunnel Alterations in Maverick Square.

Surveys for extension of Dorchester Rapid Transit facilities.

SAMUEL C. LYMAN, *Assistant Engineer.*

In charge of stockyard and steel shop at Cypher street.

THOMAS J. MULDOON, *Clerk and Stenographer.*

At stockyard at Cypher street.

* Left the employ of the Transit Company.

APPENDIX E.

CANVASS OF BIDS FOR FURNISHING AND DELIVERING TO THE CITY OF BOSTON TRANSIT DEPARTMENT, FREIGHT PREPAID, F. O. B. BOSTON & ALBANY SIDING, COMMONWEALTH PIER No. 1, EAST BOSTON, ABOUT 200 TONS OF SQUARE DEFORMED STRUCTURAL STEEL REINFORCING RODS, 36 FEET LONG. FEBRUARY 27, 1923.

Bidder.	Price per ton of 2,000 lbs.				Discount for payment in ten days from receipt of goods, per cent.	Net Amount.	Time of delivery, working days from date of contract.
	Type of rod.	50 tons 4-inch rods.	110 tons 4-inch rods.	40 tons 4-inch rods.	Gross Amount.		
Barker Steel Company, 7 Water street, Boston, Mass.....	 Gabriel.....	\$60 00 3,000 00	\$61 00 6,710 00	\$62 00 2,480 00	 \$12,190 00	One =\$121 90	Thirty.
* Bancroft & Martin Rolling Mills Company, 141 Milk street, Boston, Mass.....	 Has no name.	56 69 2,834 50	57 37 6,310 70	58 71 2,348 40	 11,493 60	Half of one = 57 47	Twenty.

* Awarded. Contract 758.

APPENDIX F.

CANVASS OF BIDS FOR FURNISHING AND DELIVERING IN TRUCK-LOAD
 LOTS, AS CALLED FOR UNTIL DECEMBER 31, 1923, ALONG THE LINE
 OF THE WORK IN THE VICINITY OF MAVERICK SQUARE, EAST BOSTON,
 4,000 TONS, MORE OR LESS, OF SAND. MAY 3, 1923.

Bidder.	Price per ton.	Amount.
Boston Sand and Gravel Co., 88 Broad street, Boston, Mass.....	\$1.55	\$6,200.00
A. DeStefano & Co., 10 Everett street, East Boston, Mass.....	1.49	* 5,960.00

* Awarded. Contract 759.

APPENDIX G.

BID FOR FURNISHING AND DELIVERING, FREIGHT PREPAID, TO THE BOSTON TRANSIT DEPARTMENT, COMMONWEALTH PIER NO. 1, EAST BOSTON, MASS., 20,000 SQUARE YARDS, MORE OR LESS, OF ASPHALT-SATURATED COTTON FABRIC FOR WATERPROOFING PURPOSES. MAY 17, 1923.

Bidder.....	Minwax Co., Inc., 18 East 41st St., New York City.
Price per square yard.....	\$0.24
Discount for payment in ten days after receipt of material.	Two per cent.
Amount of bid less 2 per cent. discount..	\$4,704.00
Time of delivery.....	As required on ten days notice.

Contract 760.

APPENDIX H.

CANVASS OF BIDS FOR BRICK ENTRANCE AND EXIT SURFACE BUILDING FOR
MAVERICK SQUARE STATION, EAST BOSTON TUNNEL. AUGUST
8, 1923.

Bidder.	Lump sum.	Time of completion.
A. Piotti Co., 708 Dudley street, Boston.....	\$17,196.00	Ten weeks from date of signing the contract.
Archdeacon & Sullivan, 5 East Concord street, Boston.....	16,800.00	Not stated.
George C. Irwin & Co., 96 West Brookline street, Boston.....	16,325.00	Ten weeks.
*Carmine Antonellis, 28 Shepard street, Brighton	12,200.00	About ten weeks from date of starting work.

*Awarded. Contract 761.

APPENDIX I.

CANVASS OF BIDS FOR FURNISHING AND DELIVERING AT COMMONWEALTH
PIER No. 1, EAST BOSTON, WITH ALL CHARGES PREPAID, 7,500
BARRELS, MORE OR LESS, OF PORTLAND CEMENT CONTAINING LESS
THAN SIX PER CENT. OF ALUMINA. AUGUST 15, 1923.

	J. P. O'Connell & Co., 73 Tremont street, Boston, Mass.	*Portland Stone Ware Co., 49 Federal street, Boston, Mass.
Brands.....	Allentown or Say- lor.	Acme.
Price per barrel, including four cloth bags.....	\$3.18	\$3.08
Credit for returned bags, per bag:		
At warehouse.....	0.07	0.08
At mill.....	0.10	0.10
Discount for payment in ten days from receipt of bills, per barrel.....	0.10	0.10
Net price per barrel with four bags returned:		
To warehouse.....	2.90	2.76
To mill.....	2.78	2.68
To warehouse and discount taken.....	2.80	2.66
To mill and discount taken,	2.68	2.58

* Awarded. Contract 762.

APPENDIX J.

CANVASS OF BIDS FOR FURNISHING AND DELIVERING IN TRUCK-LOAD LOTS, AS CALLED FOR, UNTIL DECEMBER 31, 1923, ALONG THE LINE OF THE WORK IN THE VICINITY OF MAVERICK SQUARE, EAST BOSTON, 4,000 TONS, MORE OR LESS, OF SAND. SEPTEMBER 19, 1923.

Bidder.	Price per ton of 2,000 lbs. delivered.	Amount.	Per cent discount for payment in ten days after receipt of material.
Boston Sand & Gravel Co., 88 Broad street, Boston.....	\$1.45	\$5,800 00	1
A. DeStefano Co., 10 Everett St., East Boston,	1.40	5,600 00	
The Scully Co., 118 First street, Cambridge..	1.23	* 4,920.00	2

* Awarded. Contract 766.

APPENDIX K.

CANVASS OF BIDS FOR MIXING AND APPLYING 11,000 SQUARE YARDS,
MORE OR LESS, OF PLASTER ON WALLS AND CEILINGS OF MAVERICK
STATION OF THE EAST BOSTON TUNNEL. OCTOBER 17, 1923.

Bidder.	Price per Sq. Yd.	Amount.
A. V. Day & Co., 1 Washington street, Boston	\$1.95	* \$21,450 00
George A. Craffey Co., 816 Old South Building, Boston	0.75	8,250 00

* Awarded. Contract 769.

APPENDIX L.

BID FOR FURNISHING AND SETTING IN PLACE DOORS, WINDOWS AND GRILLES AT MAVERICK STATION, EAST BOSTON TUNNEL ALTERATIONS. DECEMBER 3, 1923.

BIDDER.....	E. Van Noorden Co., 100 Magazine street, Roxbury, Mass.	
Time of completion.....	To be set in place within two weeks of the date of notification by the Department that the openings are ready.	
Items.	Price bid.	Amount.
(a) 20, more or less, Kalamein doors, type A...	\$83 00	\$1,660 00
(b) 6, " " " " " " B...	84 00	504 00
(c) 5, " " " " " " D...	76 00	380 00
(d) 2, " " " pair Kalamein doors, type E,	77 00	154 00
(e) 7, " " " Kalamein windows hinged at bottom, 4' x 2' opening.....	34 00	238 00
(f) 4, more or less, Kalamein windows hinged at bottom, 2' 6" x 1' 6" opening.....	27 00	108 00
(g) 1, or more, Kalamein windows hinged at bottom, 3' x 2' opening.....	29 00	29 00
(h) 8, more or less, hung windows with copper-covered sashes and frames.....	118 00	944 00
(k) 7, more or less, wire grilles, 4' x 2' opening..	10 50	73 50
(l) 4, more or less, wire grilles, 2' 6" x 1' 6" opening.....	9 75	39 00
(m) 1 or more wire grilles, 3' x 2' opening.....	9 75	9 75
(n) 1 or more wire grilles, 1' 8" x 1' 4" opening..	9 75	9 75
Total.....		\$4,149 00

Awarded. Contract 770.

APPENDIX M.

CANVASS OF BIDS FOR FURNISHING AND DELIVERING SQUARE DEFORMED BILLET — STEEL CONCRETE — REINFORCEMENT BARS TO THE STOCKYARD OF THE CITY OF BOSTON — TRANSIT DEPARTMENT, 14 CYPHER STREET, SOUTH BOSTON. DECEMBER 27, 1923.

BIDDER.	Type of rod.	Price per ton of 2,000 pounds.		Gross Amount.	Discount for payment in ten days after receipt of material, per cent.	Net Amount.	Time of delivery, working days from date of contract.	Remarks.
		15 tons $\frac{1}{2}$ " rods 36 feet long.	50 tons $\frac{1}{2}$ " rods 36 feet long.					
Corrugated Bar Company, 27 School street, Boston, Mass.	Corrugated Square.	\$57 30 \$59 50	\$59 30 2,965 00	\$3,824 50	Half of one = \$19 12	\$3,805 38	6 to 7 weeks.	
Corrugated Bar Company, 27 School street, Boston, Mass.	Corrugated Square.	(40' or 60' lengths.) $\frac{3}{4}$ " 55 30 \$29 80	(40' or 60' lengths.) 59 30 2,965 00	3,794 80	Half of 1 = 18 97	3,775 83	Shipment in 3 to 4 days from stock at Blasdell, New York.	Intermediate grade steel. Standard Specifications.
* Baneroff & Martin Rolling Mills Company, Everett, Mass.	Square Deformed.	56 99 \$54 85	58 79 2,939 50	3,794 35	Half of one = 18 97	3,775 38	Five.	

* Awarded. Contract 771.

APPENDIX N.

CANVASS OF BIDS FOR FURNISHING AND DELIVERING, FREIGHT PREPAID, AT STOCKYARD AT 14 CYPHER STREET, SOUTH BOSTON, 7,500 BARRELS, MORE OR LESS, OF PORTLAND CEMENT, AS MAY BE REQUIRED BY THE DEPARTMENT, CONTAINING NOT OVER SIX PER CENT. OF ALUMINA. JANUARY 3, 1924.

BIDDER.	Brands.	Price for barrel, including four cloth bags.	Credit for returned bags, per bag.		Discount for payment in ten days from receipt of bills, per barrel.	Net price per barrel with four bags returned.			
			At warehouse.	At mill.		To warehouse.	To mill.	To warehouse and discount taken.	To mill and discount taken.
J. P. O'Connell & Co. 73 Tremont St., Boston.	Not stated.	\$3.03	\$0.07	\$0.10	\$0.10	\$2.75	\$2.63	\$2.65	\$2.53
Portland Stone Ware Co. 49 Federal St., Boston.	Acme.	2.93	0.07	0.10	0.10	2.65	2.53	2.55	2.43
J. Massirman & Co. 137 Everett Ave., Chelsea.	Acme.	* 2.93	0.07	0.10	0.10	2.65	2.53	2.55	2.43

* Awarded. Contract 772.

